DACW-33-85-D-0011 Delivery Order 0018
Roughans Point, Revere, ME

OFFICE COPY DO NOT REMOVE

ATLANTIC TESTING LABORATORIES, LIMITED

Sustaining Member—N.Y.S. Society of Professional Engineers

atl

Box 29
Canton, N.Y. 13617
(315) 386-4578

Box 356
Cicero, N.Y. 13039
(315) 699-5281

April 7, 1987

U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254-9149

Attn: Chief, Engineering Division
NEDED

Re: Subsurface Investigation
Roughans Point, Revere, MA
Contract DACW-33-85-D-0011
Delivery Order No. 0018
ATL Report No. CD020-1-3-87

Gentlemen:

In accordance with Delivery Order No. 0018, dated 25 November 1986, attached is one final copy of our Engineering Report for the subsurface investigation performed at Roughans Point in Revere, MA.

By copy of this letter, we are also transmitting two copies of this report to the Chief of the Geotechnical Engineering Branch.

If you have any questions or comments, please do not hesitate to contact our office.

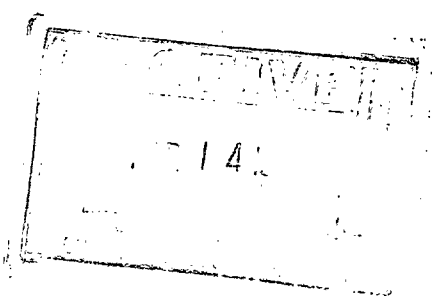
Respectfully submitted,

Spencer F. Thew, P.E./L.S.
President

SFT/TAB/jm

encs.

2 cc: Chief, Geotechnical Engineering Branch, NEDED-GF



SECTION 1

SUBSURFACE INVESTIGATION
ROUGHANS POINT
REVERE, MA

CONTRACT DACW 33-85-D-0011
CONTRACTING OFFICER:
Edward D. Hammond, LTC, CE
28 June 1985

DELIVERY ORDER NO. 0018
25 NOVEMBER 1986

PREPARED FOR: U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254-9149

PREPARED BY: Theresa A. Beddoe
Atlantic Testing Laboratories, Limited
P.O. Box 29
Canton, NY 13617

ATL Report No. CD020-1-3-87

March 6, 1987

SECTION 2

TABLE OF CONTENTS

SECTION 3

SCOPE OF INVESTIGATION

a. DELIVERY ORDER NO. 0018

CHECKED BOX APPLIES: [X] ORDER FOR SUPPLIES OR SERVICES

[ ] REQUEST FOR QUOTATIONS NO.
RETURN COPIES OF THIS QUOTE BY
(THIS IS NOT AN ORDER. See DD Form 1155)

PAGE 1 OF 3

5 CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REG 1
DO

1 CONTRACT NO	2 DELIVERY ORDER NO	3 DATE OF ORDER	4 REQUISITION/PURCHASE REQUEST NO
DACW33-85-D-0011	0015	86 NOV 25	GEB 87-22

6 ISSUED BY: CODE
Dept. of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254-9149
Buyer/Symbol: Kewer/NEDCT-C Phone: Area Code 617-647-8414

7 ADMINISTERED BY (If other than 6) CODE

8 DELIVERY FOB
[X] DEST
[ ] OTHER
(See Schedule if other)

9 CONTRACTOR/OFFEROR CODE FACILITY CODE

NAME AND ADDRESS
Atlantic Testing Laboratories, Ltd
P.O. Box 29
Canton, NY 13617

10 DELIVER TO FOB POINT BY:
In accordance with Para. 6 of Attachment 1

11 CHECK IF BUSINESS IS
[X] SMALL
[ ] SMALL DISADVANTAGED
[ ] WOMEN OWNED

12 DISCOUNT TERMS
NET

13 MAIL INVOICES TO
Finance & Accounting Officer at Issuing Office

14 Services for: CODE
U.S. Army Engineer Division, New England
ATTN: Geotechnical Engineering Branch
424 Trapelo Road
Waltham, MA 02254-9149

15 PAYMENT WILL BE MADE BY: CODE
Finance & Accounting Officer at Issuing Office

MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER

16 TYPE OF ORDER
DELIVERY [X]
PURCHASE [ ]

This delivery order is subject to instructions contained on this side of form only and is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract

Reference your furnish the following on terms specified herein, including, for U.S. purchases

General Provisions of Purchase Order on DD Form 1155, (EXCEPT CLAUSE NO. 12 APPLIES ONLY IF THIS BOX [ ] IS CHECKED, AND NO. 14 IF THIS BOX [ ] IS CHECKED), special provisions and delivery as indicated. This purchase is negotiated under authority of 10 USC 2304(a)(5) or as specified in the schedule if within the U.S., its possessions or Puerto Rico, if otherwise under 2304(a)(6).

[ ] If checked, Additional General Provisions apply; Supplier shall sign "Acceptance" on DD Form 1155, and return copies

17 ACCOUNTING AND APPROPRIATION DATA/LOCAL USE
96X3121 General Investigations
AD502304KCOL000 (MB)

SBSA
GEB
AE/PS COORD
MAK/ln

18 Line ITEM NO	19 SCHEDULE OF SUPPLIES/SERVICES	20 QUANTITY ORDERED/ACCEPTED*	21 UNIT	22 UNIT PRICE	23 AMOUNT
	Furnish necessary equipment and personnel to determine foundation conditions for proposed revetments, sluice gate and earth berm, Roughans Point, Revere, MA. in accordance with Attachment No. 1.	APPROX.			ESTIMATED
1.	GEOTECHNICAL FIELD INSPECTOR SERVICES				
1.2	Geotechnical Inspector	120	hr	$ 40.00	$ 4,800.0
1.3	Per Diem -- Overnight Stay	12	day	45.00	540.0

* If quantity accepted by the Government is same as quantity ordered, indicate by √ mark. If different, enter actual quantity accepted below quantity ordered and encircle

24 UNITED STATES OF AMERICA
BY: THOMAS A. REN, Colonel, CE
Division Engineer
CONTRACTING/ORDERING OFFICER

25 TOTAL $39,102.5
29 DIFFERENCES

26 QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

DATE SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

27 SHIP NO
[ ] PARTIAL [ ] FINAL

28 D.O. VOUCHER NO

30 INITIALS

32 PAID BY

33 AMOUNT VERIFIED CORRECT FOR

31 PAYMENT
[ ] COMPLETE [ ] PARTIAL [ ] FINAL

34 CHECK NUMBER

35 BILL OF LADING NO

36 I certify this account is correct and proper for payment
DATE SIGNATURE AND TITLE OF CERTIFYING OFFICER

37 RECEIVED AT	38 RECEIVED BY	39 DATE RECEIVED	40 TOTAL CONTAINERS	41 S/R ACCOUNT NUMBER	42 S/R VOUCHER NO

PREVIOUS EDITION WILL BE USED UNTIL EXHAUSTED.

NAME OF OFFEROR OR CONTRACTOR

Atlantic Testing Laboratories, LTD

contract line

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		APPROX.			ESTIMATED
1.4	Mileage from Waltham, MA & Return	75	MI	.35	$ 26.25
2.0	GEOTECHNICAL SERVICES AND REPORT				
2.1	Geotechnical Report	1	JOB	60% of Line Item 1.2	2,880.00
3.	SURVEYING				
3.1	Mobilization and Demobilization	1	JOB	180.00	180.00
3.2	Mileage from/to Waltham, MA	25	MI	.35	8.75
3.4	Survey Crew and equipment	1	DAY	440.00	440.00
3.5	Overnight per diem for survey crew	1	DAY	90.00	90.00
3.6	Data Reduction and Plotting	1	JOB	100% of Line Item 3.4	440.00
3.7	Standby Time	4	HR	55.00	220.00
6.	MOBILIZATION AND DEMOBILIZATION ONE DRILL RIG, CREW AND AUXILIARY EQUIPMENT				
6.1	Mobilization and Demobilization	2	JOB	700.00	1,400.00
6.2	Mileage from/to Waltham, MA	50	MI	1.15	57.50
6.5	Standby time/on site moves	80	HR	75.00	6,000.00
9.	BULLDOZER EXCAVATION AND GRADING				
9.1	Bulldozer (150 H.P.) with operator	40	HR	70.00	2,800.00
10.	FLOATING PLANT ATTENDANT VESSEL, CREW AND EQUIPMENT				
10.2	16 ft. boat	6	DAY	60.00	360.00
10.7	Mobilization and Demobilization for 320 square foot float	1	JOB	950.00	950.00
12.	AUGER BORINGS - UNCASED				
12.3	Hollow Stem Auger, 4" inside diameter	390	LF	22.00	8,580.00

STANDARD FORM 36 JULY 1986 GENERAL SERVICES ADMINISTRATION FED PROC REG 141 CFR 1-16.101 Exception Approved, March 1977	**CONTINUATION SHEET**	REF NO OF DOC BEING CONTD **Delivery Order No. 0018 to DACW33-85-D-0011**	PAGE 3 OF 3

NAME OF OFFEROR OR CONTRACTOR

Atlantic Testing Laboratories, LTD

ITEM NO Contract Line	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		APPROX.			ESTIMATED
13.	DRIVE SAMPLE BORING (SPT) WITHOUT CASING				
13.1	0-30 ft. depth	12	EA	13.00	$ 156.00
16.	THIN WALLED TUBE SAMPLING				
16.1	3-inch diameter x 30 inch Tube	6	EA	110.00	660.00
18.	DRIVING AND PULLING CASING				
18.2	HX, and 6-inch size	96	LF	28.00	2,688.00
22.	DIAMOND CORE DRILLING VERTICAL				
22.3	NWX size and/or NWM	10	LF	45.00	450.00
32.	Crane and Operator	6	DAY	896.00	5,376.00
	You are authorized to commence work on this Delivery Order on December 8, 1986.				

ATTACHMENT 1

CONTRACT NO. DACW33-85-D-0011

DELIVERY ORDER NO. 0018

EXPLORATION INSTRUCTIONS

PROJECT: Roughans Point Coastal Flood Protection Study

SITE: Roughans Point, Revere, MA

PURPOSE: Determine foundation conditions for proposed revetments, sluice gate and earth berm.

1. SCOPE OF INVESTIGATIONS

a. General.

Locate and execute twenty-three (23) drive sample borings by means of tape measuring the given distances as shown on Attachment No. 2.

b. Explorations.

(1) All explorations shall be located by the geotechnical inspector tape measuring from features shown on the Exploration Plan (Attachment No. 2). Elevations shall be determined by Contractor-provided survey crew.

(2) The twenty-three (23) drive sample borings shall be to the following depths and subject to the provisions below: FD-A, 15'; FD-B, 25'; FD-C, 15'; FD-D, 25'; FD-E, 15'; FD-F, 25'; FD-G, 15'; FD-H, 25'; FD-I, 15'; FD-J, 25'; FD-K, 15'; FD-L, 25'; FD-M, 15'; FD-N, 15'; FD-O, 50'; FD-P, 20'; FD-Q, 50'; FD-R, 20'; FD-S, 30'; FD-T, 20'; FD-U, 30'; FD-V, 15'; and FD-W, 25'. If organic materials (peat, organic silt, etc.) are still encountered at the above-specified depths, the Contractor shall notify the Government at whose discretion the borings shall be continued to fully penetrate the organic materials or to other depths as directed. If borings FD-O and FD-Q do not fully penetrate cohesive materials (silty clays, sandy clays, etc), the Contractor shall notify the Government at whose discretion the borings shall be continued to fully penetrate the cohesive materials or to other depths as directed. Payment for approved additional boring shall be made at established unit prices. If refusal is encountered in the top 15 feet of a borehole, the boring shall be continued using vertical diamond coring drilling until the hole can be completed using drive sampling methods or the required depth is reached. Boreholes shall be terminated prior to the required depth if refusal is encountered below 15 feet or below the organic materials.

(3) Standard Penetration Tests shall be taken at 5-foot intervals in the boreholes in accordance with Part II, para. 13 of the specifications. Undisturbed samples shall be taken between standard penetration tests at 10-foot intervals below the organic materials in boreholes FD-O and FD-Q, in accordance with Part II, para. 16 of the specifications.

c. Inspection. A geotechnical inspector shall act as field inspector while performing the borings. The inspector shall provide telephone reports to Mr. Ronald DeFilippo, Corps of Engineers at tel. (617) 647-8175 at least once each working day. The alternate point of contact is Mr. Paul Schimelfenyg, Corps of Engineers tel. (617) 647-8394.

d. All samples shall be delivered to the Corps of Engineers Headquarters in Waltham, Massachusetts. Sample delivery shall be coordinated with the Director, NED Materials and Water Quality Laboratory at tel. 617-647-8367/8392.

2. SITE CONDITIONS.

The proposed exploration program is aolong the Atlantic Ocean coast at Roughans Point, Revere, Massachusetts. Twenty-one of the proposed explorations are relatively flat beach areas some of which are subjected to tidal action. One proposed exploration is on a traffic island. One proposed exploration is in a marsh area. Subsurface information is shown on Attachment No. 3.

3. RIGHTS-OF-ENTRY.

Rights-of-entry will be arranged by the Contractor in cooperation with the City of Revere, Mr. Frank Stringi at tel. (617) 284-3600, ext. 111, and the Metropolitan District Commission, Mr. Henry Higgins at tel. (617) 727-7220.

4. COORDINATION.

The Contractor shall provide five days notice prior to start up of exploration activity to Mr. Ronald DeFilippo, Corps of Engineers at tel. (617) 647-8175 and Mr. Frank Stringi , City of Revere, Massachusetts at tel. (617) 284-3600, ext. 111. The alternate point of contact is Mr. Paul Schimelfenyg, Corps of Engineers at tel. (617) 647-8394.

5. EXPLORATION NUMBERS.

The boring locations designated FD-A through FD-W shown in Attachment No. 2 shall be redesignated FD-1 through FD-23 in order of their completion.

6. COMPLETION SCHEDULE

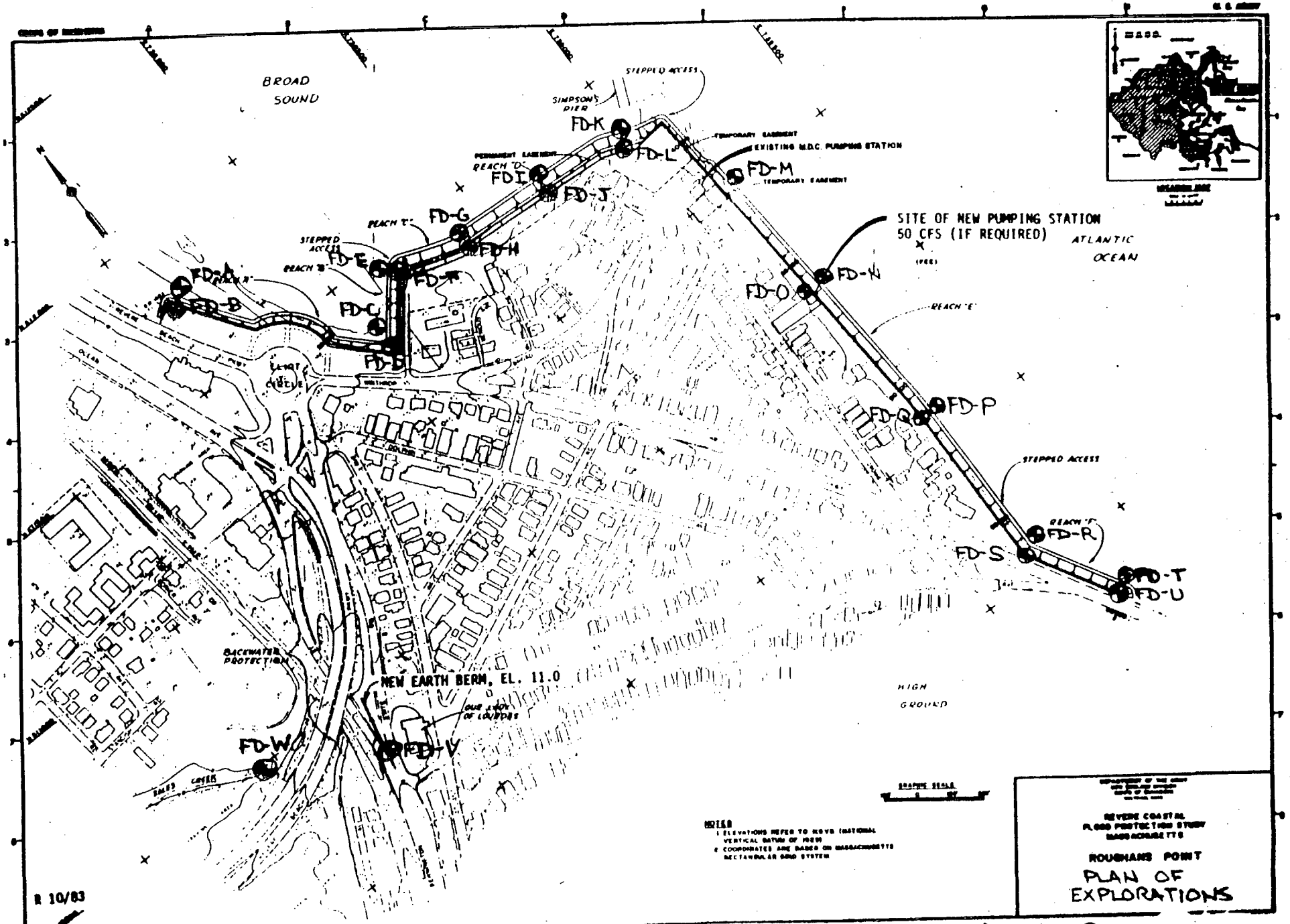
Services under this delivery order shall start within fifteen days after the receipt of the delivery order. Duration of the drilling effort is estimated to be eighteen calendar days. The geotechnical report shall be submitted in draft form for review, to the Government, postmarked no later than seven calendar days after completion of the field work.

Government review will take approximately ten calendar days from receipt of draft report. The final geotechnical report shall be submitted postmarked no later than seven calendar days after receipt of draft report with Government comments.

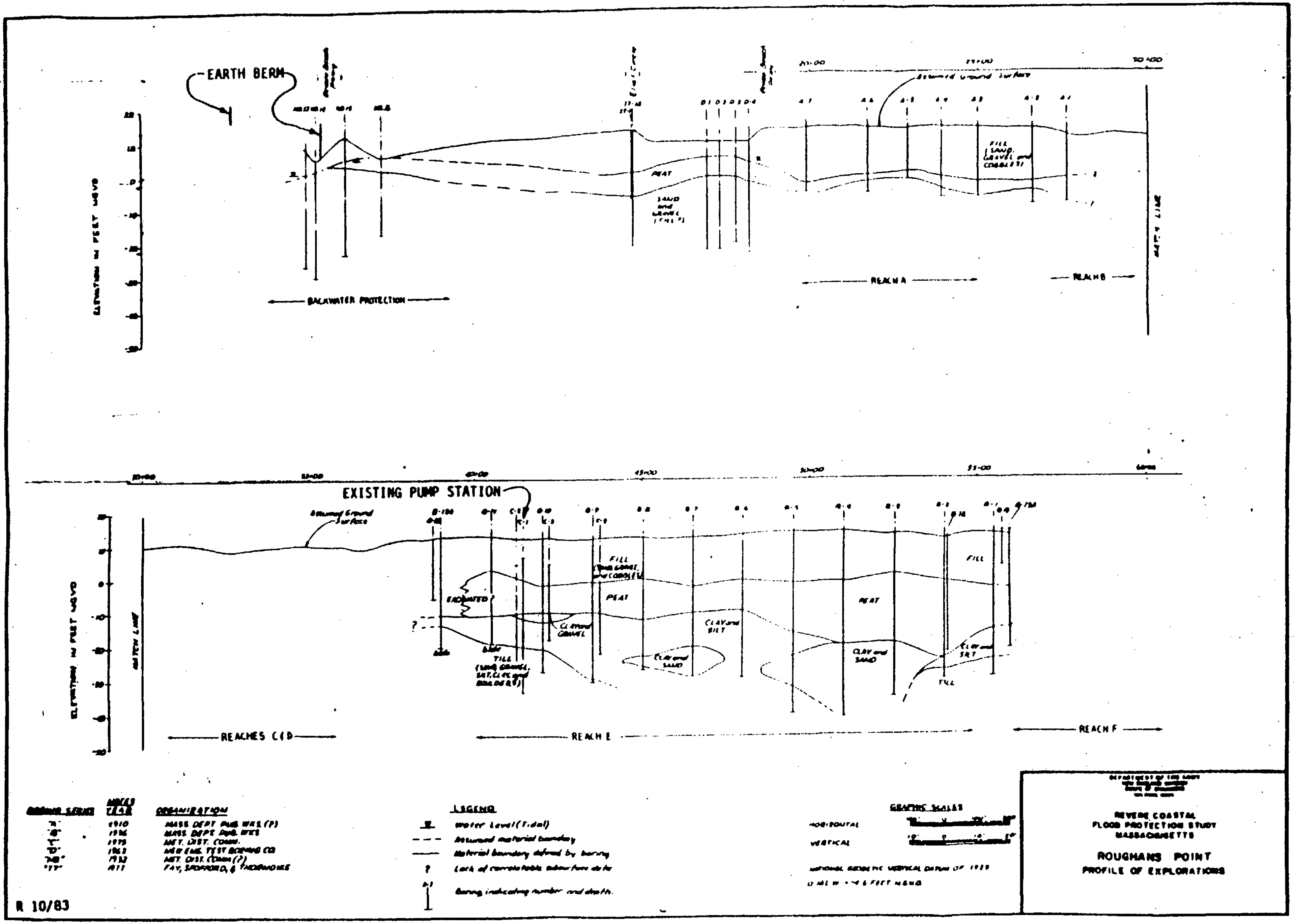
7. QUALITY CONTROL

You will be held responsible for the quality of the maps submitted and for all damages caused the Government as a result of your negligence in the performance of any services furnished under the contract.

Although submissions required by your contract are technically reviewed by the Government, it is emphasized that your work must be prosecuted using proper internal controls and review procedures. The letter of transmittal for each submission which you make shall include a certification that the submission has been subjected to your own review and coordination procedures to ensure (a) completeness for each discipline commensurate with the level effort required for that submission, (b) elimination of conflicts, errors, and omissions, and (c) the overall professional and technical accuracy of the submission. Documents which are signficantly deficient in any of these areas will be returned to you for correction and/or upgrading prior to our completing our review.


BROAD SOUND
SIMPSON'S PIER
STEPPED ACCESS
FD-K
FD-L
FD-M
TEMPORARY EASEMENT
EXISTING M.D.C. PUMPING STATION
REACH 'D'
FD-I
FD-J
FD-G
REACH 'C'
STEPPED ACCESS
FD-H
FD-E
REACH 'B'
FD-F
FD-A
REACH 'A'
FD-B
FD-C
FD-D
SITE OF NEW PUMPING STATION
50 CFS (IF REQUIRED)
ATLANTIC OCEAN
FD-N
FD-O
REACH 'E'
FD-P
FD-Q
STEPPED ACCESS
REACH 'F'
FD-R
FD-S
FD-T
FD-U
BACKWATER PROTECTION
NEW EARTH BERM, EL. 11.0
OUR LADY OF LOURDES
FD-W
FD-V
HIGH GROUND
GRAPHIC SCALE
NOTES
1 ELEVATIONS REFER TO NGVD (NATIONAL VERTICAL DATUM OF 1929)
2 COORDINATES ARE BASED ON MASSACHUSETTS RECTANGULAR GRID SYSTEM
R 10/83
REVERE COASTAL FLOOD PROTECTION STUDY
MASSACHUSETTS
ROUGHANS POINT
PLAN OF EXPLORATIONS

ATTACH 2


EARTH BERM
EXISTING PUMP STATION
ELEVATION IN FEET NGVD
PEAT
SAND and GRAVEL
FILL
CLAY and SILT
CLAY and SAND
TILL
EXCAVATED ?
Assumed Ground Surface
MATCH LINE
BACKWATER PROTECTION
REACH A
REACH B
REACHES C & D
REACH E
REACH F
LEGEND
Water Level (Tidal)
Assumed material boundary
Material boundary defined by boring
Lack of correlatable subsurface data
Boring indicating number and depth.
GRAPHIC SCALES
HORIZONTAL
VERTICAL
REVERE COASTAL
FLOOD PROTECTION STUDY
MASSACHUSETTS
ROUGHANS POINT
PROFILE OF EXPLORATIONS
R 10/83

ATTACH 3

b. Project Site

The site of the subsurface explorations is along the Atlantic Ocean coastline at Roughans Point, Revere, MA. Twenty-one of the explorations are located on relatively flat beach areas, most of which are subjected to tidal action. One exploration is on a traffic island, and one is in a marsh area. A general Project Map and Site Location Map are included in Section 8.

c. Purpose

The subsurface investigations were to determine foundation conditions for proposed revetments, sluice gate and earth berm.

d. Scope of Work

Inspection and exploration instructions, which were provided by the Army Corps of Engineers, New England Division, are included in Section 3a.

Work under this delivery order consisted of locating twenty-three drive sample borings by means of tape measuring the given distances shown on the Exploration Plan, Attachment No. 2 of the delivery order (Section 3a). Two borings (FD-W, FD87-14, and FD-V, FD86-1) were relocated due to site access problems; the remainder of the borings were completed within a five foot radius of the requested locations. A boring location plan is in Section 8c. The ground elevation was determined by an Atlantic Testing Laboratories' survey crew. Elevations were established from an existing benchmark located at an angle point in the existing seawall, near station 56+00. The explorations were performed in accordance with paragraphs 12, 13, 16, 18 and 22 of the contracted "Specifications for Services and Equipment Necessary for Conducting Geotechnical Exploratory Work, Various Locations in New England and New York". Specific instructions and changes during the course of the work were given verbally in telephone conversations with a Corps of Engineers representative and are documented in Section 5.

SECTION 4

QUALITY CONTROL

a. General Certification Statement

I hereby certify that the records, equipment and procedures mentioned below were used to perform the subsurface exploration described herein. I also certify that the work was performed in a professional manner and meets the requirements set forth in the delivery order. This report has been subject to my review and is both complete and technically accurate.

CERTIFIED 6 March 1987

Spencer F. Thew, P.E./L.S.

b. Records Taken

Pertinent drilling procedures, sampling operations, and soil classifications were noted on the following forms provided for use by the Corps of Engineers:

NED 121 - Field Log of Test Boring, Summary
NED 58 and 58a - Field Log of Test Boring
NED 74 - Field Log of Undisturbed Sampling in Drill Holes
NED 59 - Subsurface Water Observations and Boring Location Sketch

A complete series of logs for each of the borings is included in Section 8d.

Disturbed sample containers were labeled using ENG Form 1742. Undisturbed sample tubes were labeled using ENG Form 1743. A summary of daily activities and a telephone log are Tables I and II of Section 5, respectively. A chain of custody log is in Section 6. The Safety Meeting Reports, NED Form 251, including exposure time for Atlantic Testing Laboratories' personnel, are located in Section 7.

c. Equipment Used

All equipment and supplies were provided by Atlantic Testing Laboratories, Limited, with the exception of a Komatsu Track Backhoe and Caterpiller D-9, provided by a subcontractor.

1. Survey Equipment

- Wild Heerburg T-1A 20-second, erect-image theodolite
- Wild Heerburg NAK-2 automatic level
- 25' fiberglass telescoping stadia rod
- fluorescent paint, flagging, nails
- 2" x 4" x 4' long stakes

2. Drilling Equipment

- skid-mounted CME45 drill rig on trailer
- track-mounted CME45 drill rig
- 1-3/8" I.D. by 2 ft long split spoon samplers
- 140 pound hammer
- 3" I.D. by 30" long thin-walled tube samplers
- AW sized rods used to advance the samplers
- 3-1/4" I.D. hollow stem augers
- 4" I.D. casing with spin shoes
- 3-7/8" and 3-1/8" roller bits
- 3" O.D. by 5 ft diamond bit core barrel
- NW sized rods used to advance the roller bit and core barrel

d. Procedures

1. Survey Procedures

On January 5 and 6, 1987, a two man field crew of Atlantic Testing Laboratories staked out soil borings FD-A through FD-W (FD86-1, FD87-1 through FD87-22). Boring locations were established by taping distances given on Attachment No. 2 of the delivery order. The locations were taped from the landward edge of the existing wall or by extending the line of the existing wall. Borings FD-V (FD86-1) and FD-W (FD87-14) were located

as indicated on the exploration plan, but moved slightly due to access problems. FD-V was requested in the center of a four lane highway, and was moved to the adjoining traffic island to minimize safety hazards. FD-W was requested in the center of Sales Creek next to a concrete abutment; it was moved to the other side of the abutment and correspondingly deepened to compensate for the elevation difference.

Elevations were established on January 6, 1987, on the above borings from an existing benchmark located at an angle point in the existing seawall, near stations 56+00 and boring FD-S (FD87-20). The reference benchmark is a chiselled square in the top of the seawall. The reference elevation is 17.31 ft mean sea level. A closed level loop was run on the soil borings proceding from the benchmark north and west along the coast to FD-A (FD87-5), south to Winthrop Parkway and southeast along the Winthrop Parkway to the benchmark. The elevations of borings FD-V (FD86-1) and FD-W (FD87-14) were determined from a temporary benchmark established on the first loop.

These elevations are accurate only for the day they were established. Subsequent tides and a series of violent storms altered the beach profile to one more typical of the winter (i.e. a stony, steep face). However, the elevations should indicate actual boring elevations to within one half foot. The borings most probably affected are the eight borings along Reach E and Reach F, FD-N through FD-U (FD87-15 through FD87-22).

2. Drilling Procedures

Borings FD-O (FD87-15), FD-Q (FD87-21), FD-S (FD87-20) and FD-U (FD87-22) were located in the large boulder rip rap directly at the base of the seawall. These were cleared by a subcontractor with a Komatsu Track Backhoe. After the borings were completed, the subcontractor returned to the site to replace the boulders and return the rip rap to its original condition. This work has been inspected and is complete. Boring FD-W (FD87-14) was cleared of small trees by a subcontracted Caterpiller D-9, which also cleared a road down to the boring location. This work had been cleared with a representative of the property owner, Mr. Robert Cerretani.

Twenty of the borings were advanced using 3-1/4" I.D. hollow stem augers to 2 ft above specified depth. The final 2 ft of the borings were completed by sampling. The augers were cleaned out, when necessary, with a water hose prior to sampling. Boring FD-U (FD87-22) was advanced to 11.0 ft using hollow stem augers and completed using a 3-1/8" roller bit in the open hole. Borings FD-O (FD87-15) and FD-Q (FD87-21) were advanced to 30.0 ft and 20.0 ft respectively by spinning 4" casing and washing out with a 3-7/8" roller bit. A 3-1/4" I.D. hollow stem auger was used to start FD-O (FD87-15). These two borings were continued to 2 ft short of completion by advancing the 3-7/8" roller bit in the open hole. The final two ft of the borings were completed by sampling.

All the borings were completed at the specified depths, except for FD-O (FD87-15) and FD-Q (FD87-21) which were deeper than requested and FD-T (FD87-19) and FD-U (FD87-22) which were shallower than requested. These changes were authorized by the Corps of Engineers (see Section 5). FD-W (FD87-14) was deepened to terminate at the requested elevation in order to accomodate its new location, which was requested by Atlantic Testing Laboratories.

Standard penetration testing sampling was accomplished using a 1-3/8" I.D. by 2 ft long split spoon sampler advanced by a 140 pound hammer dropping in free fall from a height of 30", in accordance with ASTM D-1586. The sampling interval was 5 ft. Refusal was defined as 100 blows in less than 18 inches or bouncing refusal. The soil samples were placed in 16 oz glass jars with hermetically sealed lids. The samples were not classified in the field because of freezing or near freezing temperatures wind/chill factor. The samples were brought to room temperature and classified in accordance with ASTM D-2488. Jars were labeled using ENG Form 1742, provided by the Corps of Engineers.

Thin-walled tube sampling was performed using a 3" I.D. by 30" long tube advanced into undisturbed soils using a steady downpressure provided by the rig, in accordance with ASTM D-1587. The sampler was allowed to set for 10 minutes, given one full twist and extracted. The base of the tube was capped, taped and sealed in beeswax. Disturbed material was removed from the top of the tube and used for sample classification in accordance with ASTM D-2488. The top of the sample was capped in the tube with beeswax. The remainder of the tube was filled with beach sand; the tube was capped, taped and sealed with beeswax. The tubes were labeled with ENG Form 1743 and placed in an undisturbed sample shipping box, provided by the Corps of Engineers.

Chain of Custody Logs were maintained documenting custody of the samples between Atlantic Testing Laboratories and the Corps of Engineers. All samples were delivered to the USACE NED Materials and Water Quality Laboratory.

Fourteen of the twenty-three borings were completed in the first four days of drilling effort. The completion of the remainder of the borings was hampered by several factors:

1. A property owner, Ms. Dorothy Scholwin, denied ATL access across her beachfront property which extended to mean low water. Access was granted January 12, 1987 after she received a written request for access (included in Section 9b).

2. The winter storm season began December 31, 1986 and battered the coastline with an unusually great number of storms. Two drilling days were generally lost to each storm, the day of the storm itself and the day after, when the storm surge from the storm center in the Atlantic Ocean remained high.

3. The remainder of the borings were along Reach E and Reach F and were affected by the tides. Access to these borings was rendered brief by the tides; at most a five hour work shift was possible between high tides. This five hour shift was further shortened when low tide did not correspond to the brief daylight hours. The height of low tide also had an effect on the number of hours worked; when low tide was high, access was not possible. When the tides permitted two work periods during the day, one in the early morning and one in the early evening, lights were used. However, because of the residential neighborhood, work was not possible before 6:30 AM or after 11:00 PM.

These factors resulted in an unusually long completion period for the job. Section 5 contains a Summary of Activities, which includes daily tide and storm information.

SECTION 5

SUMMARY OF ACTIVITIES
AND
TELEPHONE LOG

TABLE I

Summary of Activities

NOTE: On-site hours reflect inspector's on-site time.

Tide information gives time of high or low tide/height of the tide in feet referenced to mean low water for Boston Harbor (from 1987 Tide Tables for East Coast of North and South America, U.S. Dept. of Commerce, NOAA, National Ocean Service).

Weather information is provided to reflect the influence of storms on drilling activity.

Date	Activity
December 29	Monday: - Mobilize inspector TA Beddoe, two drillers, skid-mounted CME 45 and raft to site.
December 30	Tuesday: on-site 7:00-5:00 - Weather: cool (30's), overcast, windy. - Locate Roughans Point, investigate site for access. - Pat Sullivan, Manager, ATL Subsurface Exploration Division, on-site for site reconnaissance. - Stake out borings V, W, B, C. - Repair flat tire on skid rig's trailer. - Unload drilling material at Roughans Point. - Investigate site re: necessity of crane to lower rig over wall. All that will necessary is a track vehicle to move the rig while the tide is out. - Conduct safety meeting.
December 31	Wednesday: on-site 7:00 - 10:30 - Weather: overcast, cool (30's), windy. - Complete boring FD86-1 (V).
January 5	Monday: on-site 12:00 - 4:30 - Weather: clear, upper 30's, breezy. - Tide: 0908/-0.1, 1523/9.9 - Travel to site. - Survey crew stake out borings FD-A, B, C and E. Begin taping distances along seawall for remainder of borings. - Meet Ms. Dorothy Scholwin, 156 Broad Sound, 289-5529 who denied us access to the last six borings. ATL cannot cross her beachfront with our equipment. - Immediately thereafter we were denied access along the seawall when a property owner wired the fence shut. He allowed us to cut the wires provided we wire the fence shut when finished. His big concern was his liability if a child fell off the seawall onto the rocks below. - Mobilize track-mounted CME45 to site.

Date	Activity
January 6	Tuesday: on-site 7:00 - 4:00 - Weather: clear, warm (upper 30's), slightly breezy. - Tides: 1006/0.3, 1622/9.2 - Stake out remainder of borings. - Run level survey of boring locations to obtain elevations. - Complete borings FD87-1 through FD87-6 (FD-A, B, C, D, E, F). - Hold safety meeting. - Standby time 1 hour for call to Corps (track rig).
January 7	Wednesday: on-site 7:00 - 5:00 - Weather: partly cloudy, breezy, 40's - Tides: 0457/9.4, 1107/0.5, 1721/8.6. - Delay in morning due to high water. Investigate the remainder of the boring locations with respect to access problems. - Possible subcontractor on site to investigate boring locations FD-O, Q, S, U, W re: clearing access to them. - Complete FD87 - 7, 8, 9 (FD-G, H, I). FD87-10 (J) abandonned at 20' due to rising tide. Augers could not be left in the hole because of flowing sands.
January 8	Thursday: on-site 7:00 - 5:00 - Weather: clear, 30's, windy, raw. - Tides: 0551/9.3, 1212/0.6, 1825/8.2. - Complete borings FD87-10, 11, 12, 13 (FD - J, K, L, M). - Ron DeFilippo and Paul Schimelfenyg on site. Showed them Ms. Scholwin's property and problematic boring locations, spoke about access problems. - Possible subcontractor did not contact ATL. - Note large amounts of standby time will be used because of the tides, especially next week.
January 9	Friday: on-site 7:00 - 3:00 - Weather: clear, 30's breezy. - Tides: 0647/9.2, 1312/0.6, 1926/7.9. - Telecons to Corps, Canton, City of Revere Assesser's Office, Landmark Engineering & Surveying, Inc., Suffolk Registry, Revere lawyer Edward J. Leach, Ms. Dorothy Scholwin regarding blocked access to last six borings. - A letter requesting an easement was sent via Federal Express to Ms. Dorothy Scholwin from ATL corporate headquarters, Canton, NY. This letter is included in Section 9b. - No drilling accomplished as air transportation for the weekend had been cancelled. - Retained services of Caruso Construction Company, Charlie Connor, Principal, to provide track backhoe and D-9 to clear access to borings FD-O, Q, S, U, W. - Obtain clearance from Mr. Robert Cerretani to complete boring W, including cutting trees to build a road for access. - Standby time 5 hours for the tide (skid and track rigs).

Date	Activity
January 12	Monday: on-site 4:00 - 5:30 - Weather: overcast, 30's, windy. - Tides: 0916/9.4, 1546/0.2, 2158/8.0. - Travel to site. - Subcontractor cleared access to FD-0. - Dorothy Scholwin gave verbal permission to cross her property after having received the letter written by ATL. - Will try to complete FD-N, P, R, T, W. After these seaward borings have been completed, the rip rap can be cleared for access to the remaining borings along the seawall.
January 13	Tuesday: on-site 6:30 - 7:00 - Weather: clear, 30's, windy, raw. - Tides: 1001/9.5, 1626/0.1, 2240/8.1. - Hold safety meeting. - Unable to accomplish any drilling because of tides. Little work will be accomplished this week because of them. - Move rigs to pull-out in order to move on FD-W tomorrow. - Subcontractor cleared access to FD-W. - Standby time 8 hours for the tide (skid and track rigs).
January 14	Wednesday: on-site 7:00 - 1:00 - Weather: clear, breezy, upper 30's. - Tides: 1040/9.6, 1705/0.0. - Complete FD86-14 (FD-W). - Track-mounted CME45 demobilized to Winnepesauke. - Return travel to Canton. - Standby time 8 hours for the tide (skid rig)
January 19	Monday - Weather: storm in progress. - Travel to site. - Track-mounted CME45 mobilized from Winnepesauke to Revere. Hauler requires maintenance. - Standby time 4 hours due to tide/weather (skid rig)
January 20	Tuesday: on-site 7:00 - 5:30 - Weather: clear, 20's, breezy. - Tides: 0831/0.6, 1437/9.1. - Sea high (about 1 ft higher than normal) because of storm now off the coast. The 4 to 8 inches of snow received last night did not significantly impede our progress. - Advance FD87-15 (FD-0) to 12 ft using augers. Pulled augers when the tide forced us off the site. We will spin casing tomorrow. - Could not access FD-N due to high water. - Conduct safety meeting. - Standby time 4 hours due to tide (skid and track rigs)

Date	Activity
January 21	Wednesday: on-site 7:30 - 7:30 - Weather: high 30's, overcast, light breeze. - Tides: 0919/0.6, 1524/8.8. - Unable to access FD-0 with skid rig. Access to other borings with the skid rig not possible because of high seas. - Complete FD87-16 (FD-N) using track-mounted rig. - Skid-mounted CME45 demobilized to Winnepesauke. - Note heavy breakers due to approaching storm.

January 22	Thursday: on-site 7:00 - 12:00
	- Weather: overcast, windy, 20's.
	- Tides: 1009/0.5, 1618/8.5.
	- Complete FD87-17 (FD-R).
	- Ron DeFilippo on-site
	  - Delivered seven boxes of samples to him.
	  - Authorized boring termination when it became apparent that the silts and clays were interbedded with organics. The last sample did terminate in sandy silt.
	  - Emphasized the importance of hard hats.
	  - Requested frequent checking of the 30" hammer drop to ensure it is correct.
	- Storm brought stong east winds at the end of the boring; rising tide forced us off-site.
	- Left Boston to return to Canton at 1:30. We determined that the storm would render work Friday impossible.

January 26	Monday: - Weather: frigid, windy, heavy snow with clearing in the afternoon. - Travel to site. - Note vandalism to rig: spark plug wires had been pulled and gauges broken. No serious damage had been done.
January 27	Tuesday: on-site 8:00 - 1:00 - Weather: clear, windy, heavy seas. - Tides: 0837/10.7, 1510/-1.2. - Conduct safety meeting. - Attempt to access borings, but high seas with breakers topping the walls and localized flooding kept the boring locations inaccessible. - Work on repairing the rig. - Find a marine forecast that indicated we might be able to access the borings tomorrow. - Standby time 4.5 hours due to tide (track rig).

Date	Activity
January 28	Wednesday: on-site 9:00 - 5:30 - Weather: clear, 20's, light breeze - Tides: 0935/11.1, 1607/-1.6. - Rig repair completed. - Complete FD87-18 (FD-P) - Drill 11.75' of FD87-19 (FD-T) before tide forced us to vacate. Entire depth of boring was in dense, sandy till. - Lynn Mazzarella, 149 Endicott Avenue, Revere, stopped by to request that when the rip rap is placed by the public stairs, a path be left open so that elderly people can access the beach easily. Do not block the stairs with a huge boulder, as had been done before. - Standby time 2.5 hours due to tide (track rig).
January 29	Thursday: on-site 9:00 - 5:30 Weather: clear, light breeze. - Tides: 1033/11.4, 1701/-1.9. - Access FD87-15 (FD-0) after removing a large boulder which had fallen in. Spin 10' of casing. Attempt to sample at 15' (10' from surface) yeilded no recovery due to surface gravel which remained in the casing. We did not have the proper roller bit for clearning out casing. We will clean out Tuesday and resample, either at 15 or 17 ft. Darkness forced us off-site. - Standby time 1.5 hours due to tide (track rig).
January 30	Friday: - Return travel to Canton.
February 2	Monday: - Travel to job site. - Minor vandalism noted. Fifty feet of fire hose stolen.
February 3	Tuesday: 7:00 - 10:30 - Weather: cloudy, high 30's, sprinkles in mid-morning, clearing at noon. - Tides: 0841/-0.5, 1455/9.6, 2103/-0.4. - First Shift: Advance FD87-15 (FD-0) 9 ft before returning tide forced us off. - Ron DeFilippo on-site to witness undisturbed sampling. He had expected piston sampling and indicated that that might be requested. Would determine if we could terminate FD87-15 (FD-0) early if we have encountered till. He delivered a formal definition of density terms to be used on the boring logs. - Hold safety meeting. - Rent a bank of lights so that we will be able to work at night. - Second Shift: Advance FD87-15 (FD-0) 8 ft to 32 ft. Note trouble with recovery of soils.

Date	Activity
February 4	Wednesday: on-site 7:00 - 11:00 - Weather: partly sunny, flurries, mild. - Tides: 0935/0.0, 1548/8.9, 2153/0.3. - Subcontractor on-site. Cleared FD-Q, partially cleared FD-U and FD-S. - First Shift: Have trouble with trash pump. Advance FD87-15 (FD-0) 10 ft to 42 ft. The rig shifted during drilling which slightly bent 10 ft of NW rod. - Second Shift: Advance FD87-15 (FD-0) to 48.5 ft, taking one undisturbed sample. Material which caused refusal of tube was sampled. Recovered a grey till-like material. Will take another sample at 50 ft.
February 5	Thursday: on-site 7:30 - 12:30 - Weather: clear, windy, cold-frigid. - Tides: 1032/0.4, 1745/7.7. - Drill using roller bit to 49 ft through dense material. Water swivel seized up, so we stopped short of 50 ft to take a sample. Sample from 49-51 ft and recover gravelly sand. Drill to 52 ft, noting problems with water pressure and the swivel. The swivel broke at 52 ft and we terminated drilling. Noted caving at 50 ft. - We will have problems maintaining an open hole without a decent flow of water and a water swivel. We rented a better trash pump. Canton will ship a new water swivel. - We will work the weekend, drilling FD-S and FD-U until the water swivel comes in.
February 6	Friday: 8:00 - 1:00 - Weather: clear, warm (30's), breezy. - Tides: 1131/0.8, 1745/7.7. - Subcontractor on-site, cleared access to FD-S and FD-U. - Complete FD87-20 (FD-S), intersecting no great thickness of till. - Water swivel not received. It is being sent Federal Express.
February 7	Saturday: 9:30 - 2:30 - Weather: Clear, warm (40's). - Tides: 0603/8.8, 1233/1.0, 1842/7. - Attempt to access FD-U, but low tide was too high. We flooded the engine in the attempt. - Water swivels arrived too late to enable us to access FD87-15 (FD-0).
February 8	Sunday: 10:30 - 3:00 - Weather: clear, warm (30's) - Tides: 0701/8.7, 1336/1.0, 1974/7.4. - Complete FD87-15 (FD-0), noting difficulty with caving. Also, as water pressure was not great, had difficulty flushing sandy particles out of the hole. Pull casing. - Standby time 1.5 hours due to approaching storm.

Date	Activity
February 9	Monday: 11:00 - 12:30 - Weather: violent storm in progress. - Tides: 0758/8.8, 1432/0.8. - Information from tide table allowed us to schedule work for the remainder of the week and next week. - On-site to break casing and attempt boring access, but the heavy snowstorm with high winds coupled with a high low tide thwarted us.
February 10	Tuesday: 12:00 - 1:00 - Weather: clear, sunny, windy, cold - 20's. - Tides: 0850/9.0, 1520/0.6. - Pick up copy of tide tables in Boston. - On-site to attempt access, but storm surge too great. Height of tide combined with calm sea should allow access tomorrow as expected. - Hold safety meeting.
February 11	Wednesday: 12:30 - 5:30 - Weather: sunny, windy, cold (low 30's). - Tides: 0938/9.2, 1602/0.3. - Advance FD87-21 (FD-Q) from 0.0 to 12.0 ft.
February 12	Thursday: 2:00 - 6:30 - Weather: overcast, still, low 30's. - Tides: 1020/9.5, 1640/0.0. - Travel to Waltham USACE NED HQ to deliver four boxes of samples to the Materials and Water Quality Laboratory. - Pick up copies of ENG Form 1743, and undisturbed sample shipping box, which they provided. - Advance FD87-21 (FD-Q) 10' from 12 to 22 ft. - Begin travel to Canton.
February 16	Monday: on-site 5:00 - 9:00 - Tides: 0640/0.0, 1250/9.7, 1903/-0.5. - Note inspector change to PM Fisher. - Conduct safety meeting. - Complete FD87-22 (FD-U) at 22.5' after drilling through 10 ft of till.
February 17	Tuesday: on-site 7:00 - 9:00 - Tides: 0722/-0.1, 1330/9.6, 1941/-0.3. - First Shift: Moved onto FD87-21 (FD-Q) but did not advance the boring due to cold weather and mechanical problems. - Repaired rig. - Second Shift: Advanced FD87-21 (FD-Q) from 22 to 32 ft.

Date	Activity
February 18	Wednesday: on-site 6:00 - 10:30 - Tides: 0804/-0.2, 1412/9.3, 2022/-0.1. - First Shift: Advance FD87-21 (FD-Q) from 32 to 35 ft. Develop pump problems. - Subcontractor on-site to replace rip rap. - Second Shift: Noted vandalism of rig during the day. Advanced FD87-21 (FD-Q) from 35 to 50 ft.
February 19	Thursday: on-site 7:00 - 2:00 - Tides: 0852/-0.1, 1458/8.9. - Completed FD87-21 (FD-Q) at 56.5 ft. - Picked up equipment. - Track-mounted CME45, inspector demobilized to Winnepesauke.
February 21	Saturday: - Subcontractor completed rip rap replacement.
February 23	Monday: - Samples delivered to USACE NED Materials and Water Quality Laboratory.
February 25	Wednesday: 12:45 - 1:45 - Quality of rip rap replacement inspected by Gregory Craig of ATL's Manchester, New Hampshire office, as directed by the inspector. Job appears neat and complete.

TABLE II

Telephone Log

Date	Conversation
December 30	Tuesday: Ron DeFilippo - Utility clearance for FD-V: Corps felt that if boring was performed at or near the grassy area and not as requested on Attachment No. 2 of the delivery order, no utility clearance was necessary. Corps authorized moving boring to grassy area. - Position of borings along the seawall. Locations are referenced from the landward side of the crest of the seawall. No borings would be on the wall. Inspector realized later that the structure emphasized on Attachment No. 2 is the future and not the present seawall.
December 31	Wednesday: Ron DeFilippo - Completion of boring FD86-1 (V) though we did not intercept an organic layer? Corps authorized boring termination. - Numbering boring FD-V FD86-1 and the remaining borings FD87-1 through FD87-22 in accordance with previous procedure? Yes. - ATL will need more jar sample labels.
January 5	Monday: Ron DeFilippo - Re: access problem created by Ms. Dorothy Scholwin. Recommended calling Frank Stringey, City of Revere, or Dennis Wascowitz, USACE if the city could not help.
January 5	Monday: Frank Stringey, City of Revere - The city of Revere was familiar with Ms. Scholwin. Call him later in the week to see what progress he has made.
January 6	Tuesday: Ron DeFilippo - No organics found in FD-E or FD-F. Can we terminate? Yes. Call the Corps only if the borings are still in the organic layer at the requested completion depth. - Is the benchmark near FD-S indicated on Attachment No. 2 of the delivery order proper to use to establish the elevations of the borings? Yes.
January 7	Wednesday: Frank Stringey, City of Revere - Corps will need to obtain a temporary restraining order to give us access across Ms. Scholwin's property. - A recent change in property laws may have redefined the seaward edge of her property, but he is not sure how.
January 8	Thursday: Ron DeFilippo - Overrun on surveying charge by 0.5 days. Because this job was bid separately from our main contract, we can only charge the Corps those quantities in our proposal. - Expect him on-site today. - Re: temporary restraining order: The Corps will start working on it immediately.

Date	Conversation
January 9	Friday: Ron DeFilippo - Re: Ms. Scholwin: Corps is presently exploring two avenues: (1) trying to obtain a navigational right to the high tide mark and (2) talking to the commonwealth of Massachusetts to gain an understanding of State Law. It is ATL's responsibility to attempt to obtain an easement through her property. If we should retain her for an easement, we will be reimbursed (Section 4, Paragraph F of the Specifications). - Corps wanted to know why we did not want to use a crane. (1) To use the crane, we would have to secure permission from at least four land owner's to allow us access to the wall. Gaining this access is doubtful. Also, property is divided into narrow lots with the houses on the streets and often little or no room between them to move a crane through. Property lines are defined by chain link fences, so you could not access the spots by crossing other's property by the seawall. Only the skid rig could be lifted over the seawall, so access to all four spots would be nessary. (2) A large track vehicle would still be needed to clear the boulder rip rap from the boring locations, but it is unlikely that any could be lifted over the breakwater. This would not be a problem if the crane had a clam shell; however, access to the wall would remain a problem for the crane.
January 9	Friday: Ms. Dorothy Scholwin - She would grant ATL an easement if the request is put in writing, the purpose of the easement and a description of the work included and sent to her VIA registered mail. She would then have her lawyer approve it. She stated that she did not feel opposed to our work; she was only trying to protect her own rights. (Her request was relayed to Canton, and a letter sent VIA Federal Express this afternoon. This letter is included in Section 9b).
January 13	Tuesday: Yuri Yatsevitch - Job progress: clearance of six borings by Ms. Scholwin, removal of rip rap at FD-0, desire to do all seaward borings this week.
January 20	Tuesday: Yuri Yatsevitch - Job progress. - Will be taking undisturbed samples tomorrow from 7:00 to 12:00.
January 21	Wednesday: Terry Wong - Job progress. - Plan to continue FD-0 tomorrow.

Date	Conversation
January 29	Thursday: Ron DeFilippo - Job progress. - Requested FD87-19 (FD-T) be terminated at 12' because it is in solid till yeilding bouncing refusal. Termination was granted. - Will move onto FD-0 today, have remainder of boulders cleared Tuesday. - Tide schedule will preclude work Friday and Monday.
February 2	Monday: Ron DeFilippo - Job progress.
February 3	Tuesday: Ron DeFilippo - Regarding early termination of FD87-15 (FD-0). Corps expects that we are drilling through a lense of sand and clay and that breakthrough should be within 10 ft. Material must have blow counts higher than 30/6" to be called till. - Undisturbed sampling method is acceptable.
February 4	Wednesday: Ron DeFilippo - Job progress. - In FD87-15 (FD-0), we will take a split spoon from 45-47 ft. If it is clay, we will take a shelby tube from 47-49 ft. - Authorized us to continue the boring beyond 50 ft until we reached and verified till.
February 5	Thursday: Ron DeFilippo - Job progress and materials encountered. - Corps requested one final sample from 52 to 54 ft and then we could terminate the boring.
February 6	Friday: Ron DeFilippo - Job progress. - If we intersect 10 ft of till in boring FD-S or FD-U, may we terminate the boring? Yes. - A copy of the drilling logs has been requested by Carabetta Enterprises. Have them submit a formal application to the chief of the Engineering Division.
February 9	Monday: Ron DeFilippo - Progress of job over weekend. - Requested and was given information on height of tides from the tide tables, which allowed us to schedule work for the remainder of the week and next week.
February 11	Wednesday: Yuri Yatsevitch - Re: delivery of samples tomorrow. Left message for Ron DeFilippo.

Date	Conversation
February 12	Thursday: Yuri Yatsevitch, Ron DeFilippo - Job progress. - Need the figure from the contract dictating specifications for an undisturbed sample shipping box. - Need copies of ENG Form 1743. - Need to locate first shipment of seven boxes.
February 13	Friday: Ron DeFilippo - Job progress, soils encountered (woody organic material at base of shell-filled clay). - Would rely on the driller's expertise regarding the possibility of taking successful undisturbed samples. - Inspector will be Paul Fisher for the remainder of the job.
February 17	Tuesday: Ron DeFilippo - Project update. - Take split spoon samples if undisturbed sample tubes have no recovery in FD87-21.
February 18	Wednesday: Ron DeFilippo - Project update. - Requested FD87-21 (FD-Q) be extended past 50 ft if 30+ blow per 6" material is not achieved. - Sample on 10 ft increments or upon change in strata after 50 ft.
February 19	Thursday: Ron DeFilippo - Project update. - Termination of FD87-21 (FD-Q) in dense sandy silt. - Samples will be delivered to Materials and Water Quality laboratory next week.
February 25	Wednesday: Ron DeFilippo - Must have someone from ATL inspect the replacement of the rip rap. Someone will come down from the Manchester, NH office. - Copies of the boring logs were not delivered with the samples. They will be mailed to his attention today.

SECTION 6

CHAIN OF CUSTODY LOGS

ATLANTIC TESTING LABORATORIES, Limited

CHAIN OF CUSTODY LOG

PROJECT: Roughan's Point, Revere MA
DACW33-85-D-0011, D.O. #0018

ITEMS:

Tubes -0-

Bottles -0-

Jar Samples 7 boxes, 84 jars

Core Boxes -0-

Sampling Logs -0-

Date & Time Received	Date & Time Transferred	Comments	Custodian
as sampled	1/22/86 11:00		TTB eddoe
1/22/86 11:00			

ATLANTIC TESTING LABORATORIES, Limited

CHAIN OF CUSTODY LOG

PROJECT: Roughan's Point, Revere MA
DACW 33-85-D-0011, D.O.#0018

ITEMS:

Tubes 1

Bottles -0-

Jar Samples 4 boxes, 48 jars

Core Boxes -0-

Sampling Logs -0-

Date & Time Received	Date & Time Transferred	Comments	Custodian
as sampled	2/12/87, 9:30		TBeddoe
2/12/87, 9:30			Stephen M. Rainis

Theresa Baldor

atl ATLANTIC TESTING LABORATORIES, Limited

CHAIN OF CUSTODY LOG

PROJECT: ROUGHAN'S POINT, REVERE BEACH, MA
DACW 33-85-D-0011, DO #0018

ITEMS:
3 Tubes FD-87-15 (UD-2) FD-87-21 (UD-1+2)
Bottles NONE
Jar Samples 3 Box FD-87-15, FD-87-21 + FD-87-22
Core Boxes NONE
Sampling Logs NONE

Date & Time Received	Date & Time Transferred	Comments	Custodian
AS SAMPLED	2/21/87, 1200	PAUL FISHER	
2/21/87, 1200	2/21/87, 1200	GREGORY P. CRAIG	GPC
	2/23/87 1030	JOSEPH COLUCCI	JC

SECTION 7

SAFETY REPORTS

WEEKLY SAFETY MEETING

NEDSO

Date held 12/30/86

THRU: Area Engineer, New England Area

Time 12:00

TO: Safety Office, NED

Report No. CD020

1. Weekly safety meeting was held this date for the following personnel:

Contract No. /D.O.No. 0018 Contractor Atlantic Testing Laboratories, Ltd.

Conducted By Beddoe All personnel present (Contr) 4
(Sub) 0
(Govt) 0

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

✓ Accident Prevention Plan

✓ Individual Protective Equipment - cold weather clothing, proper boots

✓ Prevention of Falls - use salt around equipment, watch footing along seawall.

✓ Back Injury, Safe Lifting Techniques -

✓ Fire Prevention -

Sanitation, First Aid, Waste Disposal -

✓ Tripping Hazards - trash, hose, nails in lumber - place stored equipment properly

✓ Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

✓ Equipment Inspection & Maintenance (Zero Defects) - watch ropes and cables

✓ Hoisting Equipment -

✓ Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

✓ Loose Rock and Steep Slopes - seawall slopes and boulders

Explosives -

✓ Water Safety - re: tides

Toxic materials - hazards, MSDS, respiratory, ventilation -

Other - delivered emergency phone #s and hospital location to drillers

Prepared by TAB Title Geologist

✓ 2. Forwarded.

Signature Theresa A. Beddoe
Resident Engineer

CF: EXPOSURE HOURS:
Work Date: 12/29, 12/30, 12/31
Non-work Date: 12/28, 1/1, 1/2, 1/3

Man Hours:
Contr: 52.5
Subcontr: 0
Govt: 0
TOTAL: 52.5

NED, APD, FL 251

WEEKLY SAFETY MEETING

NEDSO

Date held 1/6/87

THRU: Area Engineer, New England Area

Time 2:30

TO: Safety Office, NED

Report No. CD020

1. Weekly safety meeting was held this date for the following personnel:

Contract No. /D.O.No. 0018 Contractor Atlantic Testing Laboratories, Ltd.

Conducted By TABeddoe All personnel present (Contr) 5
(Sub) 0
(Govt) 0

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

✓Accident Prevention Plan

✓Individual Protective Equipment - proper gloves

✓Prevention of Falls - watch slick rocks - rocks icy in early morning

Back Injury, Safe Lifting Techniques -

✓Fire Prevention -

✓Sanitation, First Aid, Waste Disposal - No littering!

✓Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

✓Equipment Inspection & Maintenance (Zero Defects) - re: new gin ropes - will have them this weekend.

Hoisting Equipment -

✓Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

✓Loose Rock and Steep Slopes -

Explosives -

✓Water Safety - watch the tides carefully for protection of personnel + equipment,

Toxic materials - hazards, MSDS, respiratory, ventilation -

✓Other - delivered emergency numbers to additional drillers

Prepared by Beddoe Title Geol.

2. Forwarded.

Signature Theresa A. Beddoe
Resident Engineer

CF: EXPOSURE HOURS:
Work Date: 1/5, 1/6, 1/7, 1/8, 1/9
Non-work Date: 1/4, 1/10

Man Hours:
Contr: 186
Subcontr: 2
Govt: 7
TOTAL: 195

NED APR FL 62 251

WEEKLY SAFETY MEETING

NEDSO

Date held 1/13/86

THRU: Area Engineer, New England Area

Time 7:00

TO: Safety Office, NED

Report No. CD020

1. Weekly safety meeting was held this date for the following personnel:

Contract No. /D.O.No. 0018 Contractor Atlantic Testing Laboratories, Ltd.

Conducted By TABeddoe All personnel present (Contr) 5
(Sub) _____
(Govt) _____

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

✓ Accident Prevention Plan

✓ Individual Protective Equipment -

✓ Prevention of Falls - watch footing at all times

✓ Back Injury, Safe Lifting Techniques -

Fire Prevention -

Sanitation, First Aid, Waste Disposal -

✓ Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

✓ Equipment Inspection & Maintenance (Zero Defects) -

Hoisting Equipment -

Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

✓ Loose Rock and Steep Slopes -

Explosives -

✓ Water Safety -

✓ Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by TABeddoe Title Geol.

2. Forwarded.

Signature Theresa A. Beddoe
Resident Engineer

CF: EXPOSURE HOURS:
Work Date: 1/12, 1/13, 1/14
Non-work Date: 1/11, 1/15, 1/16, 1/17

Man Hours:
Contr: 80
Subcontr: 4.5
Govt: 0
TOTAL: 84.5

NED APR FL 62 251

WEEKLY SAFETY MEETING

NEDSO

Date held 1/20/86

THRU: Area Engineer, New England Area

Time 10:00

TO: Safety Office, NED

Report No. CD020

1. Weekly safety meeting was held this date for the following personnel:

Contract No. /D.O.No. 0018 Contractor Atlantic Testing Laboratories, Ltd.

Conducted By Beddoe

All personnel present (Contr) 5
(Sub) 0
(Govt) 0

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

✓ Accident Prevention Plan

✓ Individual Protective Equipment -

✓ Prevention of Falls - watch ice!

Back Injury, Safe Lifting Techniques -

Fire Prevention -

Sanitation, First Aid, Waste Disposal -

✓ Tripping Hazards - trash, hose, nails in lumber - rocks

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

✓ Equipment Inspection & Maintenance (Zero Defects) -

Hoisting Equipment -

Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

✓ Loose Rock and Steep Slopes -

Explosives -

✓ Water Safety - moving rigs through water

Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by Beddoe Title Geol

2. Forwarded.

Signature Theresa A. Beddoe
Resident Engineer

CF: EXPOSURE HOURS:
Work Date: 1/19, 1/20, 1/21, 1/22
Non-work Date: 1/18, 1/23, 1/24

Man Hours:
Contr: 78.5
Subcontr: 0
Govt: 3.0
TOTAL: 81.5

NED APP FL 251

WEEKLY SAFETY MEETING

NEDSO

Date held 1/27/87

THRU: Area Engineer, New England Area

Time 12:00

TO: Safety Office, NED

Report No. 020

1. Weekly safety meeting was held this date for the following personnel:

Contract No. /D.O.No. 18 Contractor Atlantic Testing Laboratories, Ltd.

Conducted By Beddoe All personnel present (Contr) 3
(Sub) _____
(Govt) _____

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

✓ Accident Prevention Plan

✓ Individual Protective Equipment - hard hats !

✓ Prevention of Falls - watch footing on cobble slopes

✓ Back Injury, Safe Lifting Techniques -

Fire Prevention -

Sanitation, First Aid, Waste Disposal -

✓ Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

✓ Equipment Inspection & Maintenance (Zero Defects) -

✓ Hoisting Equipment -

Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

✓ Loose Rock and Steep Slopes -

Explosives -

Water Safety -

Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by Beddoe Title Geol.

2. Forwarded.

Signature Theresa A. Beddoe
Resident Engineer

CF: EXPOSURE HOURS:
Work Date: 1/26, 1/27, 1/28, 1/29
Non-work Date: 1/25, 1/30, 1/31

Man Hours:
Contr: 57.5
Subcontr: 0
Govt: 0
TOTAL: 57.5

NED APP FL 251

WEEKLY SAFETY MEETING

NEDSO

Date held 2/3/87

THRU: Area Engineer, Deo England Area

Time 11:00

TO: Safety Office, NED

Report No. CD020

1. Weekly safety meeting was held this date for the following personnel:

Contract No. /D.O.No. 0018 Contractor Atlantic Testing Laboratories Ltd.

Conducted By Beddoe All personnel present (Contr) 3
(Sub) _____
(Govt) _____

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

Accident Prevention Plan

✓ Individual Protective Equipment - hard hats, steel toed shoes

✓ Prevention of Falls -

Back Injury, Safe Lifting Techniques -

Fire Prevention -

✓ Sanitation, First Aid, Waste Disposal -

✓ Tripping Hazards - trash, hose, nails in lumber - rocks!

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

✓ Equipment Inspection & Maintenance (Zero Defects) - like ALCOA

Hoisting Equipment -

Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

✓ Loose Rock and Steep Slopes - watch footing in rocks & gravel

Explosives -

✓ Water Safety -

Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by Beddoe Title Geol.

2. Forwarded.

Signature Theresa A Beddoe
Resident Engineer

CF: EXPOSURE HOURS:
Work Date: 2/2, 2/3, 2/4, 2/5, 2/6, 2/7
Non-work Date: 2/1

Man Hours:
Contr: 102.0
Subcontr: 7.5
Govt: 2
TOTAL: 111.5

NED APP FL 251

WEEKLY SAFETY MEETING

NEDSO

Date held 2/9/87

THRU: Area Engineer, New England Area

Time 12:00

TO: Safety Office, NED

Report No. CD020

1. Weekly safety meeting was held this date for the following personnel:

Contract No. /D.O.No. 0018 Contractor Atlantic Testing Laboratories, Ltd.

Conducted By Beddoe All personnel present (Contr) 3
(Sub) -
(Govt) -

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

✓ Accident Prevention Plan

✓ Individual Protective Equipment -

✓ Prevention of Falls -

Back Injury, Safe Lifting Techniques -

Fire Prevention -

Sanitation, First Aid, Waste Disposal -

✓ Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

✓ Equipment Inspection & Maintenance (Zero Defects) -

✓ Hoisting Equipment -

✓ Ropes, Hooks, Chains and Slings - gin rope will need replacing soon

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

✓ Loose Rock and Steep Slopes -

Explosives -

✓ Water Safety - make sure water shallow enough to allow rig to pass — don't flood it

Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by Beddoe Title Geol.

2. Forwarded.

Signature Theresa A. Beddoe
Resident Engineer

CF: EXPOSURE HOURS:
Work Date: 2/3, 2/9, 2/10, 2/11, 2/12
Non-work Date: 2/13, 2/14

Man Hours:
Contr: 51.5
Subcontr: 0
Govt: 0
TOTAL: 51.5

NED APP FL 251

WEEKLY SAFETY MEETING

NEDSO

Date held 2/16/87

THRU: Area Engineer, NEW ENGLAND Area

Time 1700

TO: Safety Office, NED

Report No. CD020

1. Weekly safety meeting was held this date for the following personnel:

Contract No. /D.O.No. 0018 Contractor Atlantic Testing Laboratories, Ltd.

Conducted By PAUL FISHER All personnel present (Contr) 3
(Sub) =
(Govt) =

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

Accident Prevention Plan

✓ Individual Protective Equipment - BOOTS

✓ Prevention of Falls - RIP RAP, ICE

✓ Back Injury, Safe Lifting Techniques -

Fire Prevention -

Sanitation, First Aid, Waste Disposal -

Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

✓ Equipment Inspection & Maintenance (Zero Defects) - MAINTENANCE OF RIG

✓ Hoisting Equipment - DRILL RIG

✓ Ropes, Hooks, Chains and Slings - CABLE

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

✓ Loose Rock and Steep Slopes - RIP RAP

Explosives -

✓ Water Safety - OCEAN

Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by P. FISHER Title ENG

2. Forwarded.

Signature _____
Resident Engineer

CF: EXPOSURE HOURS:
Work Date: 2/16, 2/17, 2/18, 2/19
Non-work Date: 2/15, 2/20, 2/21

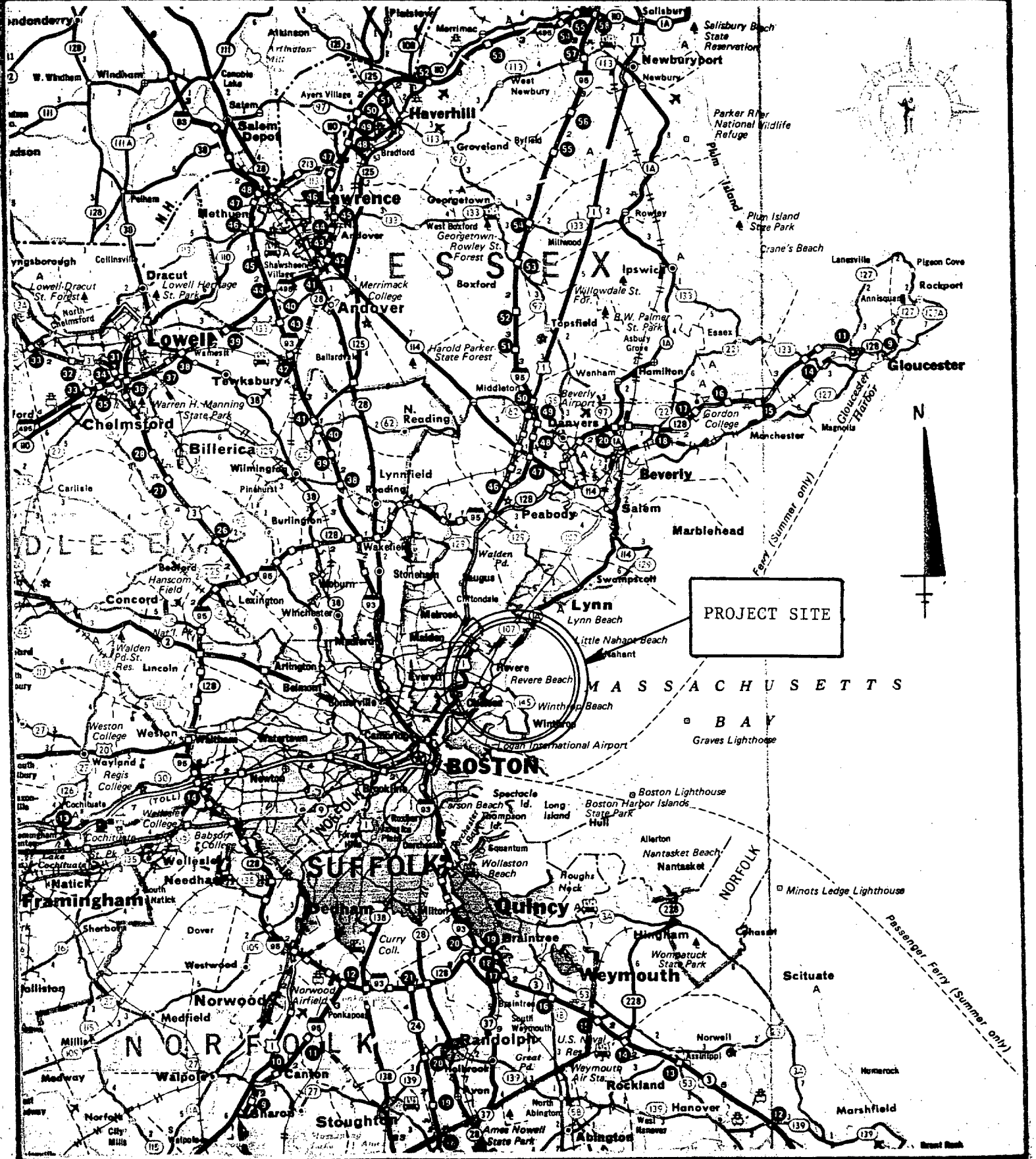
Man Hours:
Contr: 58 1/2
Subcontr: 6 1/2
Govt: 0
TOTAL: 65

NED APD FL 87 251

a. Figure 1 - General Project Map

FIGURE 1

GENERAL PROJECT MAP

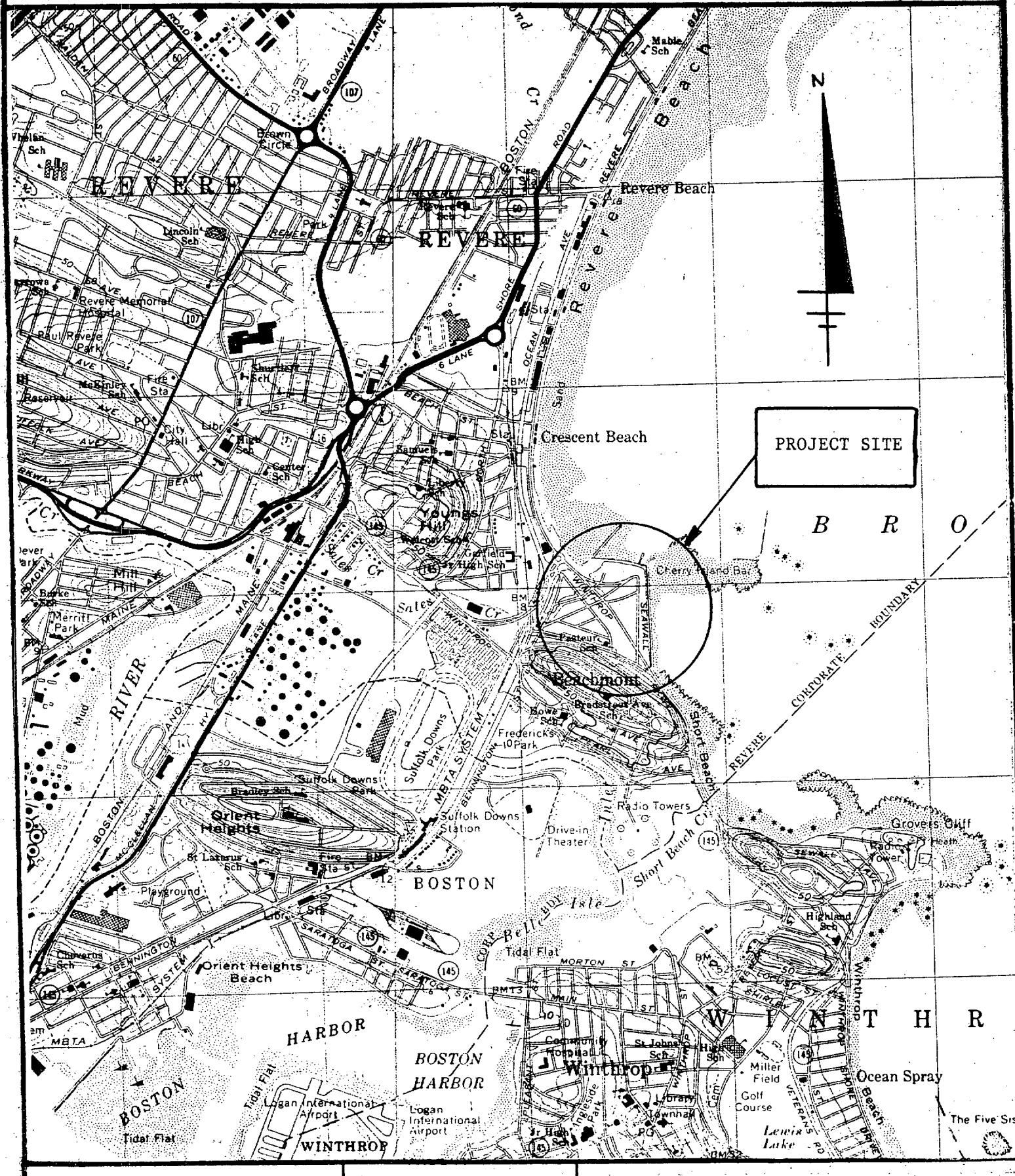


PROJECT No CD020	SCALE: 1 in. = 7 mi.	MASSACHUSETTS

b. Figure 2 – Site Location Map

FIGURE 2

SITE LOCATION MAP



PROJECT No CD020	SCALE: 1:25,000	U.S.G.S. QUAD: Boston North and Lynn Massachusetts

c. Figure 3 – Boring Location Plan


CORPS OF ENGINEERS
U. S. ARMY
BROAD SOUND
ATLANTIC OCEAN
HIGH GROUND
SIMPSON'S PIER
STEPPED ACCESS
EXISTING M.D.C. PUMPING STATION
NEW PUMPING STATION 50 CFS
REACH "A"
REACH "B"
REACH "C"
REACH "D"
REACH "E"
REACH "F"
SAND BAG CLOSURE
ELIOT CIRCLE
MBTA BLUE LINE
Raise Islands
Raise Roads
I wall El 12.0
BACKWATER PROTECTION
OUR LADY OF LOURDES
SALES CREEK
PLATE
FD87-1 Elev. 1.3' Depth 25'
FD87-2 Elev. 2.0 Depth 15'
FD87-3 Elev. 7.7' Depth 15'
FD87-4 Elev. 11.7' Depth 25'
FD87-5 Elev. 9.9' Depth 15'
FD87-6 Elev. 12.0' Depth 25'
FD87-7 Elev. -1.6' Depth 15'
FD87-8 Elev. 0.8' Depth 25'
FD87-9 Elev. -1.5' Depth 15'
FD87-10 Elev. 1.5' Depth 25'
FD87-11 Elev. 4.0' Depth 25'
FD87-13 Elev. 0.9' Depth 15'
FD87-14 Elev. 5.4' Depth 37.6'
FD87-15 Elev. 7.7' Depth 54'
FD87-16 Elev. -3.3 Depth 15'
FD87-17 Elev. 2.0' Depth 20'
FD87-18 Elev. -2.2' Depth 20'
FD87-19 Elev. -3.8' Depth 11.75'
FD87-20 Elev. 10.1' Depth 29.8'
FD87-21 Elev. 5.4' Depth 56.5'
FD87-22 Elev. 5.8' Depth 22.5'
FD86-1 Elev. 9.8' Depth 15'
E 738000
E 738500
E 739000
E 739500
N 512500
N 512000
N 511500
N 511000
N 510500
MASS.
REVERE BEACH
LOCATION MAP
SCALE IN MILES
EXPLORATION PLAN
SCALE: 1" = 100'
GRAPHIC SCALE
1" = 100'
NOTES
1. ELEVATIONS REFER TO N.G.V.D. (NATIONAL VERTICAL DATUM OF 1929).
2. COORDINATES ARE BASED ON MASSACHUSETTS RECTANGULAR GRID SYSTEM.
3. Revised by Atlantic Testing Laboratories, Ltd. to include final boring locations, 3/2/87, TAB
LEGEND
Exploration Location
FD87-12 Exploration Number
Elev. 1.0' Exploration Elevation
Depth 15' Exploration Depth
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.
REVERE COASTAL
FLOOD PROTECTION STUDY
MASSACHUSETTS
ROUGHANS POINT
EXPLORATION PLAN

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. ED86-1 Diam. (Casing) 3¼" Hollow Stem Auger — Boring Started 12/31/86

Co-ordinates: * see * Sketch — Boring Completed 12/31/86

Drilled by Todd & Saarinen — Report Submitted

Purpose of Exploration determine foundation conditions for proposed treatments, sluice gate and earth berms.

Elevation Top of Hole 9.80 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 15.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole −5.2 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; — Diam. — In.

Soil Samples 1 3/8 In. Diam. 5 No.

Soil Samples — In. Diam. — No. — Water Table Depth 8.6'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	13.0	3¼" ID Hollow Stem Auger *
13.0	15.0	1 3/8" ID Split Spoon Sampler
		* with 1 3/8" split spoon sampling
		every 5'.

INDEX

Prepared by TAB-ddoe (Field Data) — (Lab. Data)

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughans Pt, Revere MA Page 2 of 4 Pages

Boring No. FD86-1 Desig. ✓ Diam. (Casing) 3¼" Hollow Stem Auger

Co-ordinates: N see & sketch

Elevation Top of Boring 9.80 M.S.L. | Hammer Wt. 140# | Boring Started 12/31/86

Total Overburden Drilled 15.0 Feet | Hammer Drop 30" | Boring Completed 12/31/86

Elevation Top of Rock — M.S.L. | Casing Left 0

Total Rock Drilled 0 Feet | Subsurface Water Data — | Page 4

Elevation Bottom of Boring -5.2 M.S.L. | Obs. Well no

Total Depth of Boring 15.0 Feet | Drilled By Todd & Saarinen

Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill skid-mounted CME 45

Core Recovered 0 Ft. — Diam. — In. | Inspected By: Beddoe

Soil Samples 1 3/8 In. Diam. 5 No. | Classification By: Beddoe

Soil Samples — In. Diam. — No. | Classification By: —

DEPTH 0.0'	DEPTH 1'= 2'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / REC	BLOWS PER FT. / CORE RECVY	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
		S-1	1 3/8"	REC 15%	3 4 8 9	Sample using 1 3/8" ID by 2' long split spoon sampler	Dark brown m & SAND and f GRAVEL, little SILT, trace ORGANIC MATERIAL (grass, roots) (moist, nonplastic) medium dense SP-FILL
2.0'							
						3¼" ID Hollow Stem Auger to 5.0' Augering easy throughout boring	Note softer drilling consistency at 4.0'
5.0'							
		S-2	1 3/8"	20%	5 7 8 11	Sample as above.	Medium grey f SAND and SILT, trace f GRAVEL, trace CLAY (moist, very slightly plastic) medium dense SM
7.0'							
						Auger to 10'	
10.0'							

GENERAL REMARKS:

Elevations as surveyed in the field by ATL using benchmark near FD-5 (FD87-20)

All soil sampling performed in accordance with ASTM D1586 except as noted.

Site	Boring No.	Page
Roughans Point, Revere MA	FD86-1	3 of 4

DEPTH 10.0	1" = 2'	CORE/SAMPLE NO	SIZE	REC	BLOWS PER 6"	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
11.0		S-3A	1 3/8"	80%	19 24	Sample using 1 3/8" ID by 2' long split spoon sampler	Soils similar to S-2, no CLAY - SM
12.0		S-3B	1 3/8"	80%	26 30		Medium brown cmf SAND, trace f GRAVEL, trace SILT (saturated, non plastic) very dense SW
13.0						3 1/4" Hollow Stem Auger to 13.0'	
15.0		S-4	1 3/8"	40%	23 17 19 20	Sample as above	Soils similar to S-3B with a 1" plug of soils similar to S-3A SW
						Boring Terminated at 15.0', 12/31/86.	

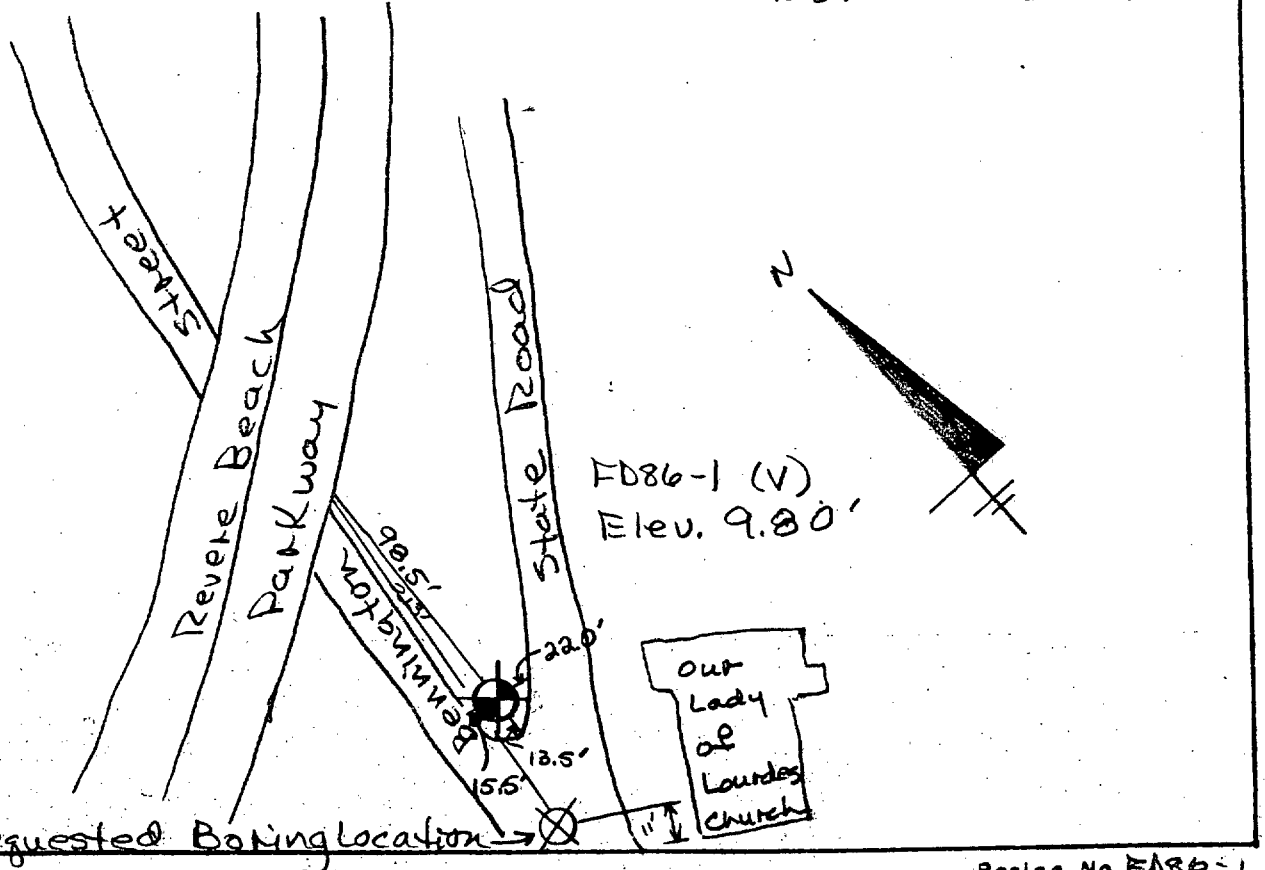
Site: Roughans Point, Revere MA
Boring No: FD86-1

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
12/3/86	9:00	13.0'	15.0'	8.6'	1.2'	after boring completion in augers

Note: Depths are in feet below original ground

BORING LOCATION SKETCH Not to Scale



Boring No. FD86-1

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. FD87-1 Diam. (Casing) 3¼" Hollow Stem Auger — Boring Started 1/6/87

Co-ordinates: * see & sketch — Boring Completed 1/6/87

Drilled by Todd + Saarinen — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole 1.30 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 25.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -23.7 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 25.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; — Diam. — in.

Soil Samples 1 3/8 in. Diam. 6 No.

Soil Samples — in. Diam. — No. — Water Table Depth 5.0'

Depth From	Depth To	Method of Drilling and Type of Bit Used
00	23.0	3¼" ID Hollow Stem Auger *
23.0	25.0	1 3/8" ID Split Spoon Sampler
		* with 1 3/8" ID Split Spoon Sampling
		every 5'

INDEX

Prepared by J.A. Beddoe — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC. 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughan's Point, Revere MA Page 2 of 4 Pages

Boring No. ED87-1 Desig. F Diam. (Casing) 3¼" Hollow Stem Auger

Co-ordinates: N see E sketch

Elevation Top of Boring 1.30 M.S.L. Hammer Wt. 140 lbs. Boring Started 1/6/87
Total Overburden Drilled 25.0 Feet Hammer Drop 30" Boring Completed 1/6/87
Elevation Top of Rock — M.S.L. Casing Left 0'
Total Rock Drilled 0 Feet Subsurface Water Data _____ Page 4
Elevation Bottom of Boring -23.7 M.S.L. Obs. Well NO
Total Depth of Boring 25.0 Feet Drilled By Todd + Saarinen
Core Recovered 0 % No. Boxes 0 Mfg. Des. Drill Skid mounted CME 45
Core Recovered 0 Ft : — Diam. — in. Inspected By: Bedloe
Soil Samples 1 3/8 in. Diam. 6 No. Classification By: Bedloe
Soil Samples — in. Diam. — No. Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / CORE RECVY	BLOWS PER FT.	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0						
1'-2'	S-1	1 3/8"	REC 25%	3 11 15 21	Sample using 1⅜" ID by 2' long split spoon sampler	Med. brown cf GRAVEL, some cmf SAND, trace SILT, trace DEBRIS (glass, shell fragments) (saturated nonplastic) dense GD
2.0						
					3¼" ID Hollow Stem Auger to 5.0'. Augering easy throughout boring.	
5.0						
	S-2	1 3/8"	17%	6 3 3 2	Sample as above	Med. brown cf GRAVEL and cmf SAND, trace SILT (saturated, nonplastic) with two lenses of medium brown f SAND and SILT, little CLAY (saturated, slightly plastic) loose GP
7.0						
					Auger to 10.0'	
10.0						

GENERAL REMARKS:

Elevations as surveyed in the field by ATL using benchmark near ED-5 (ED87-20).

All soil sampling performed in accordance with ASTM D1586 except as noted.

Site	Boring No.	Page
Roughan's Point, Revere MA	FD87-1	3 of 4

Depth (1" = 2')	Core/Sample No.	Size	Rec	Blows per 6"	6" Sampling and Coring Operations	Classification of Materials
10.0 – 12.0	S-3	1 3/8"	75%	9, 7, 16, 21	Sample using 1 3/8" ID by 2' long split spoon sampler	Med. grey-brown CLAY and SILT, trace f SAND, trace f GRAVEL (saturated, plastic) hard <u>CL</u>
12.0 – 15.0					3 1/4" ID Hollow Stem Auger to 15.0'	
15.0 – 17.0	S-4	1 3/8"	100%	10, 12, 14, 10	sample as above	Med grey cmf SAND and cf GRAVEL, trace SILT (sat., nonplastic) with one layer of soil similar to S-3 medium dense <u>SW</u>
17.0 – 20.0					Auger to 20.0'	
20.0 – 22.0	S-5	1 3/8"	100%	17, 13, 9, 7	Sample as above	Med grey mf SAND, trace cf GRAVEL, trace SILT (sat., nonplastic) medium dense <u>SP</u>
22.0 – 23.0					Auger to 23.0'	
23.0 – 25.0	S-6	1 3/8"	100%	13, 18, 20, 43	Sample as above	Very dense Similar Soils - <u>SP</u>
25.0					Boring Terminated at 25.0', 1/6/87.	

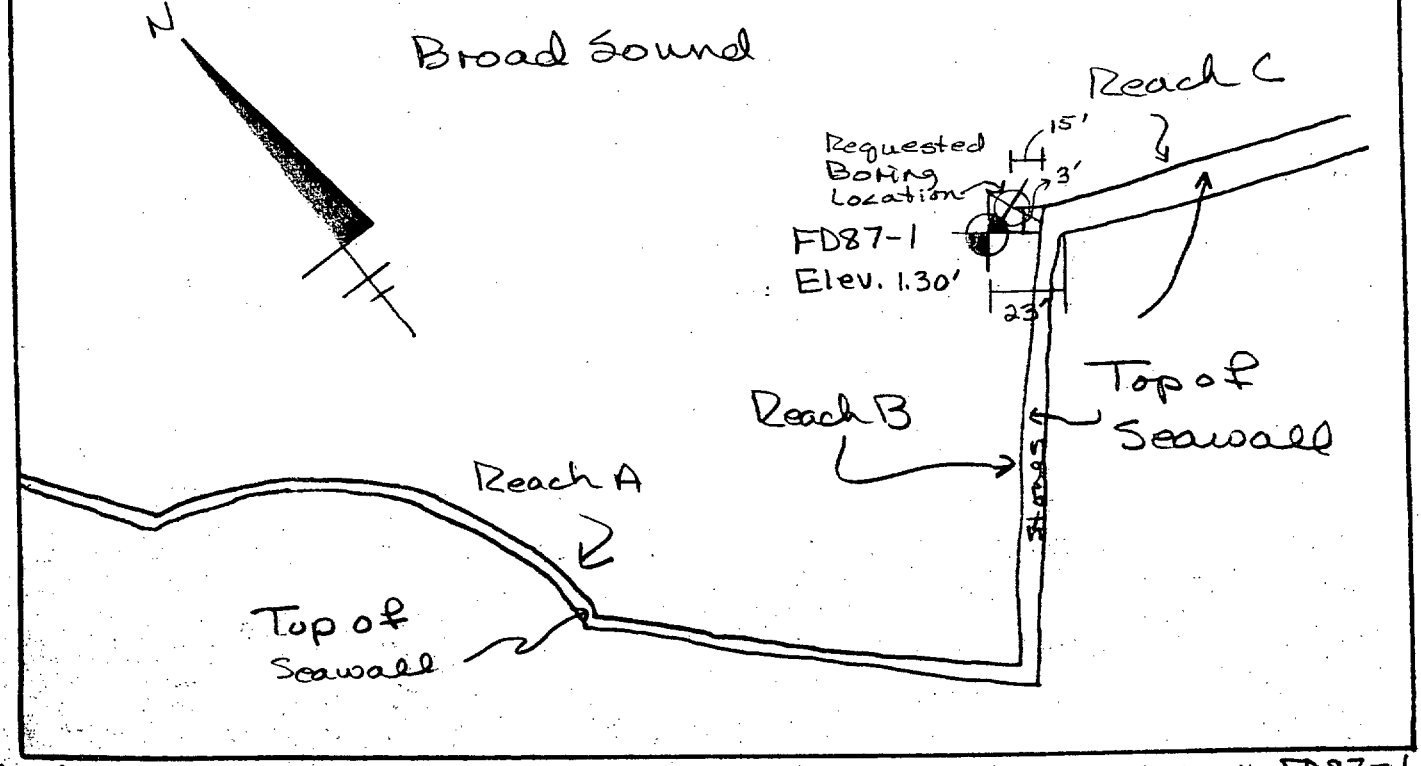
Site: Roughan's Point
Boring No: FD87-1

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/6/87	10:00	23.0	25.0	5.0	-3.7	after boring completion in augers

Note: Depths are in feet below original ground

BORING LOCATION SKETCH Not to Scale



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. # 0018

Site Rougham's Point, Revere MA — Page 1 of 4 Pages

Hole No. ED87-2 Diam. (Casing) 3¼" ID Hollow Stem Auger — Boring Started 1/6/87

Co-ordinates: X see X Sketch — Boring Completed 1/6/87

Drilled by Cambridge + Murdock — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms.

Elevation Top of Hole 0.00 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 15.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -15.0 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.: — Diam. — In.

Soil Samples 1 3/8 In. Diam. 4 No.

Soil Samples — In. Diam. — No. — Water Table Depth 3.7'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	13.0	3¼" ID Hollow Stem Auger *
13.0	15.0	1 3/8" ID Split Spoon Sampler
		* with 1 3/8" ID split spoon sampling every 5'

INDEX

Prepared by T A Beddoe — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughan's Point, Revere MA Page 2 of 4 Pages

Boring No. FD87-2 Desig. E Diam. (Casing) 3¼" Hollow Stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring 0.00 M.S.L. | Hammer Wt. 140# | Boring Started 1-6-87
Total Overburden Drilled 15.0 Feet | Hammer Drop 30" | Boring Completed 1-6-87
Elevation Top of Rock — M.S.L. | Casing Left no
Total Rock Drilled 0 Feet | Subsurface Water Data ____ | Page 4
Elevation Bottom of Boring -15.0 M.S.L. | Obs. Well no
Total Depth of Boring 15.0 Feet | Drilled By Cambridge + Murdock
Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill Hack mounted CME45
Core Recovered 0 Ft : ____ Diam. — in. | Inspected By: Beddoe
Soil Samples 1 3/8 in. Diam. 4 No. | Classification By: Beddoe
Soil Samples — in. Diam. — No. | Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	% CORE RECOVERY	BLOWS PER FT.	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0				REC	19	Sample using 1 3/8" ID by 2' long split spoon sampler	Med. brown f GRAVEL and c to f SAND, trace SHELL FRAGMENTS, trace SILT (saturated, nonplastic) dense GW
2.0'	S-1	1 3/8"		20%	16		
					17		
					21		
						3¼" ID Hollow Stem Auger to 5.0'. Augering easy throughout boring.	
5.0							
	S-2	1 3/8"		25%	2	Sample as above	Med. grey SILT, some f SAND, some CLAY, trace f GRAVEL (sat., med. plastic) medium stiff MH
					3		
					3		
7.0					3		
						Auger to 10.0'	
10.0							

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5 (FD87-20).
All soil sampling performed in accordance with ASTM D1586 except as noted.

Site: Boughan's Point, Revere MA | Boring No. FD87-2 (E) | Page 3 of 4

DEPTH	CORE/SAMPLE NO.	CORE/SAMPLE SIZE	REC/CORE RECOVERY	BLOWS PER 6"	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0' to 12.0'	S-3	1 3/8"	REC 100%	18 7 3 9	Sample using 1.3/8" ID key 2' long split spoon sampler.	MH as above
12.0 to 13.0					3 1/4" ID Hollow Stem Auger to 13.0'	
13.0 to 15.0	S-4	1 3/8"	75%	8 8 8 11	sample as above	Md. grey cmf SAND and cf GRAVEL, little SILT, trace CLAY (sat., very slightly plastic) medium dense SP-SM
15.0					Boring Terminated at 15.0' 1/6/87.	

(Test)

Boring No FD87-2

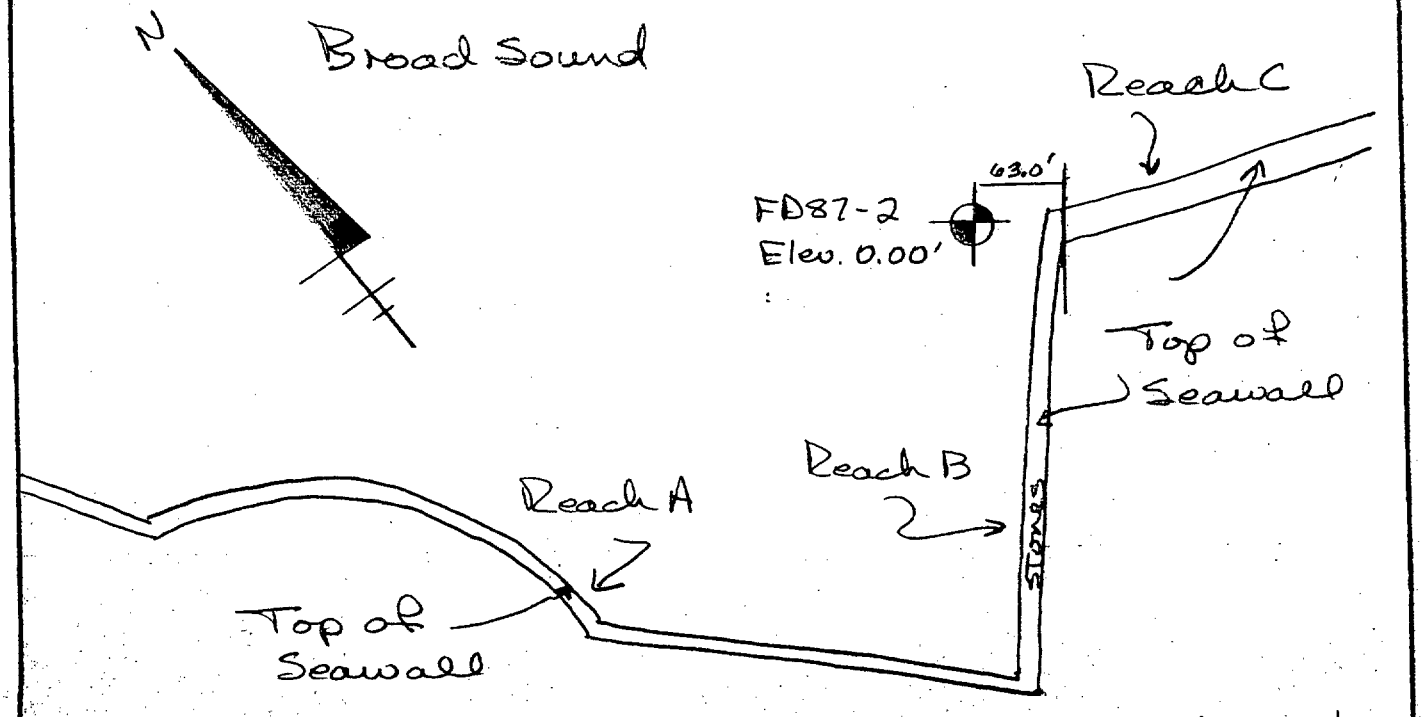
Site: Roughan's Point
Boring No: FD87-2

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/6/87	10:00	13.0	15.0	3.7'	-3.7'	in augers after boring completed

Note: Depths are in feet below original ground

BORING LOCATION SKETCH Not to Scale



Note: As-built boring location is the requested location

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. # 0018

Site Roughans Point, Revere MA — Page 1 of 4 Pages

Hole No. FD87-3 Diam. (Casing) 3¼" ID Hollow Stem Auger — Boring Started 1/6/87

Co-ordinates: X see Y sketch — Boring Completed 1/6/87

Drilled by Todd + Saarinen — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate, and earth berms

Elevation Top of Hole 7.70 M.S.L.
Total Overburden Drilled 15.0 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -7.30 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 15.0 Feet
Core Recovered 0 %
Core Recovered 0 Ft.; — Dia. — In.
Soil Samples 1 3/8 In. Dia. 4 No.
Soil Samples — In. Dia. — No.

Casing Left in Place 0 Feet

Water Table Depth 7.0'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	13.0	3¼" ID Hollow Stem Auger *
13.0	15.0	1 3/8" ID Split Spoon Sampler
		* with 1 3/8" ID Split Spoon Sampling
		every 5'

INDEX

Prepared by TABaddoe (Field Data) (Lab. Data)

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Dugan's Point, Revere MA Page 2 of 4 Pages

Boring No. FD87-3 Desig. C Diam. (Casing) 3 1/2" Hollow

Co-ordinates: N see sketch E

Elevation Top of Boring 7.70 M.S.L. Hammer Wt. 140 # Boring Started 1-6-87

Total Overburden Drilled 15.0 Feet Hammer Drop 30" Boring Completed 1-6-87

Elevation Top of Rock — M.S.L. Casing Left 0' Page 4

Total Rock Drilled 0 Feet Subsurface Water Data

Elevation Bottom of Boring -7.30 M.S.L. Obs. Well no

Total Depth of Boring 15.0 Feet Drilled By Todd + Saarinen

Core Recovered 0 % No. Boxes 0 Mfg. Des. Drill Skid-mounted CME 45

Core Recovered 0 Ft : — Diam. — in. Inspected By: Beddoe

Soil Samples 1 3/8 in. Diam. 4 No. Classification By: Beddoe

Soil Samples — in. Diam. — No. Classification By: —

DEPTH		CORE/SAMPLE			BLOWS PER FT. / CORE REC'Y	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0	1"=2'	NO.	SIZE	DEPTH RANGE / REC			
		S-1	1 3/8"	60%	2 3 6 12	Sample using 1 3/8" ID by 2' long split spoon sampler.	Med. brown c m f SAND, little f GRAVEL, trace SHELL FRAGMENTS, trace SILT (moist, nonplastic) medium dense SW
2.0						3 1/4" ID Hollow Stem Auger to 5.0'. Augering easy throughout boring.	
5.0		S-2	1 3/8"	50%	10 12 15 18	Sample as above	Similar Soils [with one 1/2" layer Med. grey SILT, some m f SAND, some CLAY (sat., mod. pl.) (saturated, nonplastic) medium dense SW
7.0						Auger to 10.0'.	
10.0							

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark FD-3 (FD87-20).
All soil sampling performed in accordance with ASTM D1586 except as noted.

Site: Roughan's Point, Revere MA

Boring No. FD87-3 (C)

DEPTH		CORE/SAMPLE NO.	SIZE	REC	BLOWS PER 6"	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0		S-3	1 3/8"	50%	3 3 2 3	Sample using 1 3/8" ID by 2' long split spoon sampler.	SW as above (no sample retained) Med grey SILT and CLAY, trace ORGANICS (roots, etc), trace f. SAND, trace f GRAVEL (wet, plastic) medium stiff MH Note natural sulphur odor. "PEAT"
12.0						3 1/4" ID Hollow Stem Auger to 13.0'	
13.0		S-4	1 3/8"	50%	14 9 12 9	sample as above	Dark Grey cf GRAVEL and cmf SAND, trace SILT (saturated, nonplastic) medium dense GW
15.0						Boring terminated at 15.0' 1/6/87.	

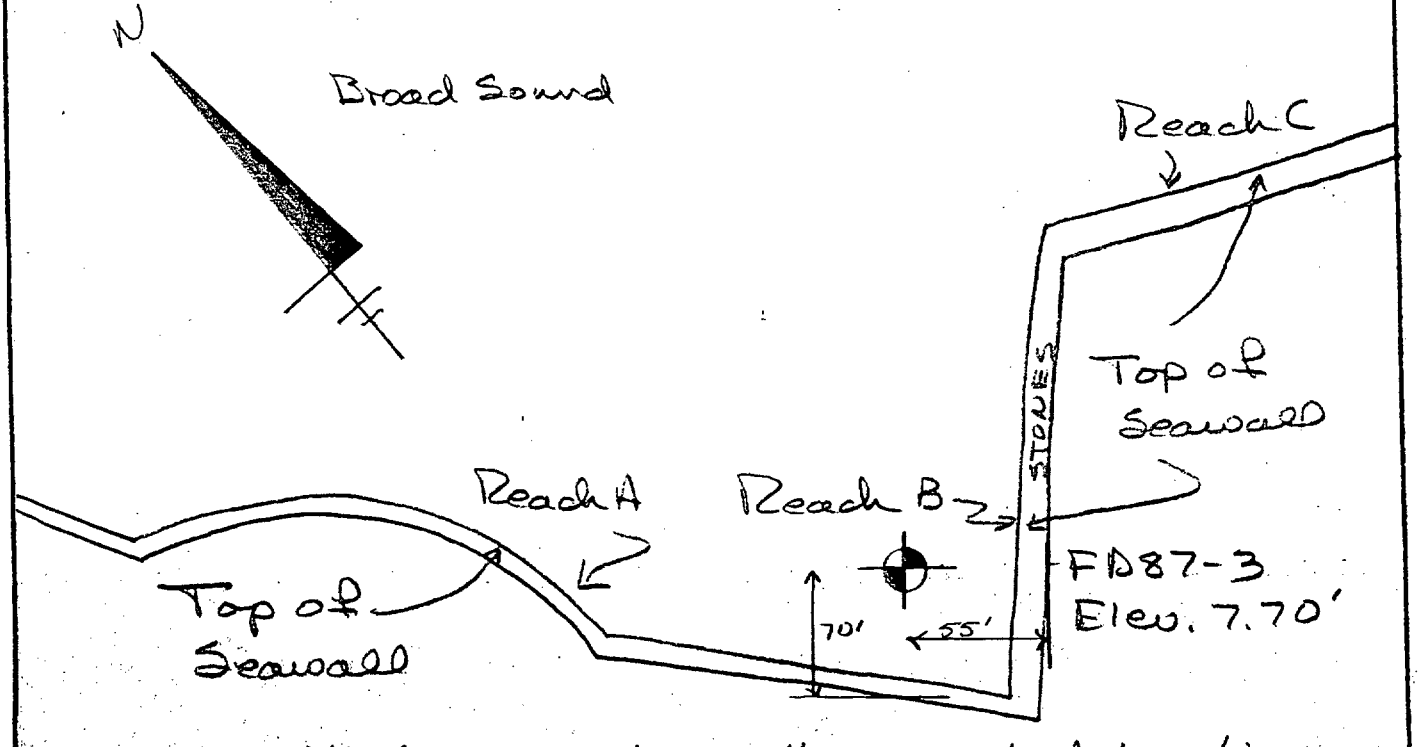
Site: Roughans Point
Boring No: FD87-3

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/6/87	1:00	13.0	15.0	7.0	0.70'	in augers after boring terminated.

Note: Depths are in feet below original ground

BORING LOCATION SKETCH Not to Scale



Note: As-built boring location is the requested location.

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O.#0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. ED87-4 Diam. (Casing) 3¼" Hollow Stem Auger — Boring Started 1/6/86

Co-ordinates: * see ** sketch — Boring Completed 1/6/86

Drilled by Cambridge + Murdock — Report Submitted

Purpose of Exploration determine foundations conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole 11.70 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 25.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -13.30 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 25.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.: — Diam. — In.

Soil Samples 1 3/8 In. Diam. 6 No.

Soil Samples — In. Diam. — No. — Water Table Depth 2.0'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	23.0	3¼" ID Hollow Stem Auger*
23.0	25.0	1 3/8" ID Split Spoon Sampler
		* with 1 3/8" ID Split Spoon Sampling
		every 5'

INDEX

Prepared by T Beddoe — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughans Point, Revere MA Page 3 of 4 Pages

Boring No. FD87-4 Desig. D Diam. (Casing) 3 1/4" Hollow Stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring 11.70 M.S.L. | Hammer Wt. 140# | Boring Started 1/6/87

Total Overburden Drilled 25.0 Feet | Hammer Drop 30" | Boring Completed 1/6/87

Elevation Top of Rock — M.S.L. | Casing Left 0'

Total Rock Drilled 0 Feet | Subsurface Water Data: ____ | Page 4

Elevation Bottom of Boring -13.3 M.S.L. | Obs. Well no

Total Depth of Boring 25.0 Feet | Drilled By Cambridge + Murdock

Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45

Core Recovered 0 Ft: — Diam. — in. | Inspected By: Beddoe

Soil Samples 1 3/8 in. Diam. 6 No. | Classification By: Beddoe

Soil Samples — in. Diam. — No. | Classification By: —

DEPTH		CORE/SAMPLE			BLOWS PER FT.	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0	1" = 2'	NO.	SIZE	DEPTH RANGE / REC	CORE RECVY		
		S-1	1 3/8"	REC 50%	3 4 5 7	Sample using 1 3/8" ID by 2' long split spoon sampler	Light brown f SAND, trace ORGANICS (roots, grass), trace f GRAVEL, trace SILT (moist, nonplastic) loose SP
2.0'							
						3 1/4" ID Hollow Stem Auger to 5.0' Augering easy throughout boring	
5.0'							
		S-2	1 3/8"	75%	13 10 8 7	Sample as above	Med. brown mf SAND, little f GRAVEL, trace SILT (moist, nonplastic) medium dense SP
7.0'							
						Auger to 10.0'	
10.0'							

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5 (FD87-20).
All soil sampling performed in accordance with ASTM D1586 except as noted.

Site: ... Roughans Point	Boring No. FD87-4	Page 3 of 4

DEPTH	CORE/SAMPLE NO.	CORE/SAMPLE SIZE	CORE/SAMPLE REC. %	BLOWS PER 6"	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0						
12.0	S-3	1 3/8"	100%	8 2 2 1	Sample using 1 3/8" ID by 2' long split spoon sampler.	Dark brown SILT, little ORGANIC MATERIAL (grass, roots, worms) trace CLAY, trace f SAND (moist, very slightly plastic) soft OL "PEAT" Note sulphur odor (natural)
15.0					3 1/4" ID Hollow Stem Auger to 15.0'	
17.0	S-4	1 3/8"	80%	4 4 9 12	Sample as above	Dark brown f SAND, some SILT, little CLAY, trace c GRAVEL (wet, slightly plastic) medium dense SM
20.0					Auger to 20.0'	
22.0	S-5	1 3/8"	100%	4 9 16 12	Sample as above	Dark grey SILT, some CLAY, little f SAND (saturated moderately plastic) very stiff MH Note sulphur odor (natural).
23.0					Auger to 23.0'	
25.0	S-6	1 3/8	100%	15 13 10 10	Sample as above	Dark brown and SAND and c GRAVEL, little SILT, trace CLAY (sat., very slightly plastic) medium dense SW
					Boring Terminated at 25.0' 1/6/87.	

(BA Test)

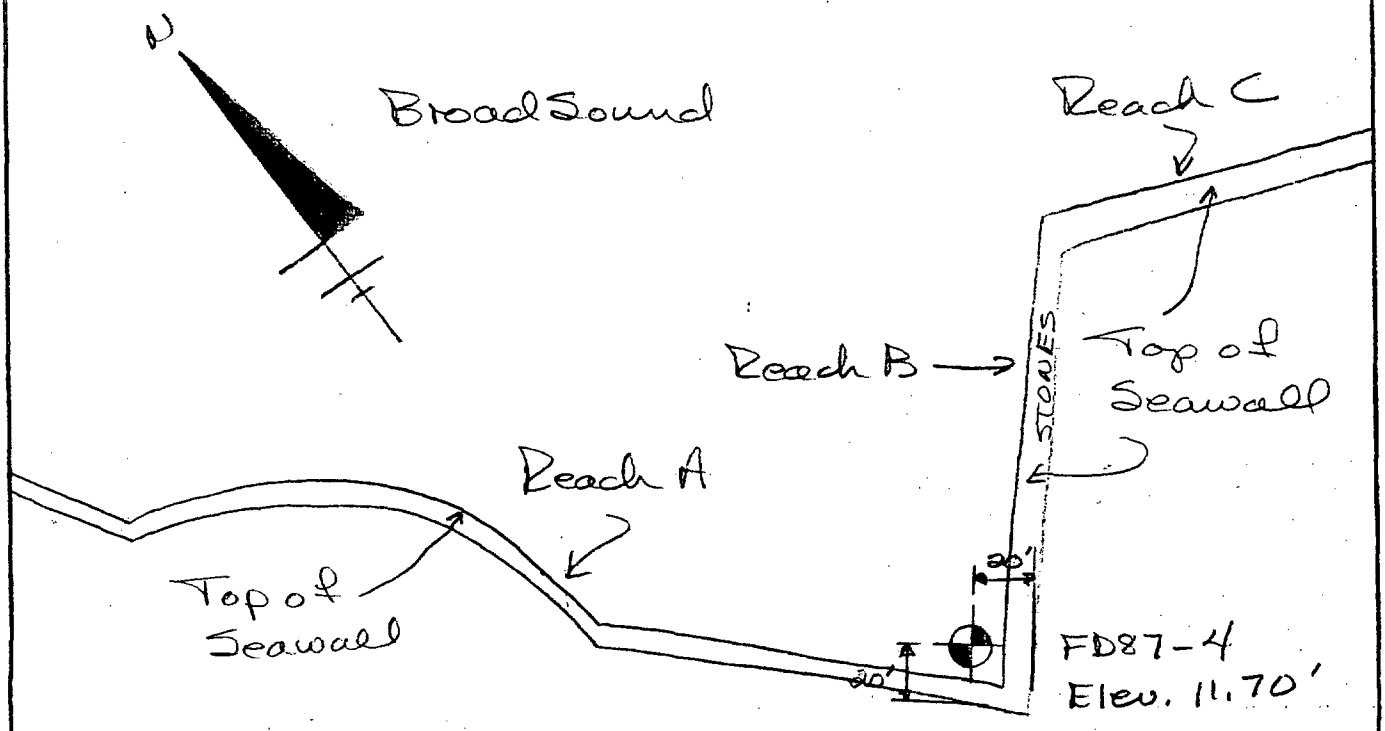
Site: Boughams Point
Boring No: FD87-4

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/6/87	1:00	23.0'	25.0'	2.0'	9.70'	in augers after boring completion

Note: Depths are in feet below original ground

BORING LOCATION SKETCH Not to scale



Note: As-built boring location is the requested location.

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O.#0018

Site Roughans Point, Revere MA — Page 1 of 4 Pages

Hole No. ED87-5 Diam. (Casing) 3¼" Hollow Stem Auger — Boring Started 1/6/86

Co-ordinates: X see X sketch — Boring Completed 1/6/86

Drilled by Cambridge & Murdock — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms.

Elevation Top of Hole 9.90 M.S.L.
Total Overburden Drilled 15.0 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -5.1 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 15.0 Feet
Core Recovered 0 %
Core Recovered 0 Ft.; — Diam. — In.
Soil Samples 13/8 In. Diam. 4 No.
Soil Samples " In. Diam. " No.

Casing Left in Place 0 Feet
Water Table Depth 5.25'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	13.0	3¼" ID Hollow Stem Auger *
13.0	15.0	1 3/8" ID Split Spoon Sampler
		* with 1 3/8" ID split spoon sampling
		every 5'

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Prepared by TABeddoe (Field Data) (Lab Data)

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Boughans Point, Revere MA Page 4 of 4 Pages

Boring No. FD87-5 Desig. A Diam. (Casing) 3¼" Hollow Stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring 9.90 M.S.L. | Hammer Wt. 140# | Boring Started 1/6/87

Total Overburden Drilled 15.0 Feet | Hammer Drop 30" | Boring Completed 1/6/87

Elevation Top of Rock — M.S.L. | Casing Left 0' |

Total Rock Drilled 0 Feet | Subsurface Water Data | Page 4

Elevation Bottom of Boring -5.1 M.S.L. | Obs. Well ND

Total Depth of Boring 15.0 Feet | Drilled By Cambridge + Murdock

Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45

Core Recovered 0 Ft : — Diam. — in. | Inspected By: Beddoe

Soil Samples 1 3/8 in. Diam. 4 No. | Classification By: Beddoe

Soil Samples — in. Diam. — No. | Classification By: —

DEPTH		CORE/SAMPLE			BLOWS PER FT.	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0	1" = 2'	NO.	SIZE	DEPTH RANGE / CORE RECVY			
		S-1	1 3/8"	REC 50%	3 5 9 11	Sample using 1 3/8" ID by 2' long split spoon sampler.	Light brown m-f SAND, little f GRAVEL, trace SILT (moist, nonplastic)
2.0							
						3¼" Hollow Stem Auger to 5.0' Augering easy throughout boring.	Medium dense SP
5.0							
		S-2	1 3/8"	50%	12 14 19 31	Sample as above	Med. brown c-m SAND, some c-f GRAVEL, trace SILT (wet, nonplastic)
7.0							
						Auger to 10.0'	dense SW
10.0							

GENERAL REMARKS:

Elevations as surveyed in the field by ATL using benchmark near FD-5, (FD87-20)

All soil sampling performed in accordance with ASTM D1586 except as noted.

Site: Roughan's Point | Boring No. FD87-5 |

DEPTH (1" = 2')	CORE/SAMPLE NO	SIZE	REC	BLOWS PER 6"	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0 – 12.0	S-3	$1\frac{3}{8}$"	10%	2 3 1 2	Sample using 1 3/8" ID by 2' long split spoon sampler.	Dark brown SILT and CLAY, trace f GRAVEL, trace f SAND, trace ORGANICS (grass) (saturated, plastic) soft MH Note natural sulphur odor
12.0 – 13.0					3 1/4" ID Hollow Stem Auger to 13.0'	
13.0 – 15.0	S-4	$1\frac{3}{8}$"	70%	5 8 8 16	Sample as above	Dark brown SILT and CLAY, little ORGANICS (grass, roots, worms), trace f. SAND (wet, plastic) very stiff MH "PEAT" Note natural sulphur odor
15.0					Boring Terminated at 15.0' 1/6/87	Note change @ 14.9 to SW sands – no sample retained as inspector was at other drill rig. Material composition substantiated by driller.

Site: Boughans Point
Boring No: FD87-5

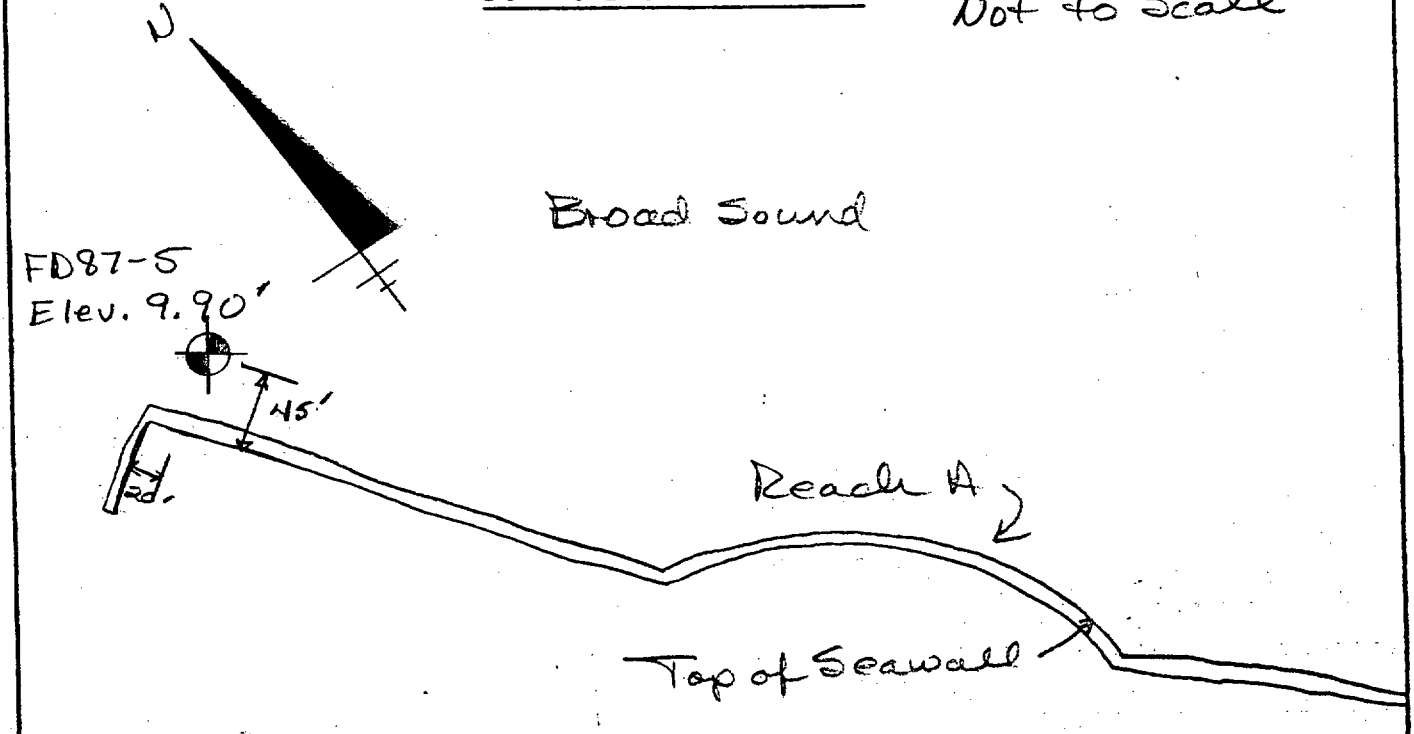
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
4/6/87	4:00	13.0	15.0	5.25'	4.65'	in augers after boring terminated

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

Not to Scale



Note: As-built boring location is the requested location.

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0016

Site Roughans Point, Revere MA — Page 1 of 4 Pages

Hole No. FD87-6 Diam. (Casing) 3¼"ID Hollow stem Auger — Boring Started 1/6/87

Co-ordinates: * see * sketch — Boring Completed 1/6/87

Drilled by Todd + Saarinen — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms.

Elevation Top of Hole 12.00 M.S.L.
Total Overburden Drilled 25.00 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -13.00 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 25.00 Feet
Core Recovered 0 %
Core Recovered 0 Ft.; — Diam. — In.
Soil Samples 1 3/8 In. Diam. 6 No.
Soil Samples — In. Diam. — No.

Casing Left in Place 0 Feet
Water Table Depth 13.0'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	23.0	3¼" ID Hollow Stem Auger *
23.0	25.0	1 3/8" ID Split Spoon sampler
		* with 1 3/8" ID Split Spoon sampling
		on 5' intervals

INDEX

Prepared by T.M. Seddon — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughans Point, Revere MA Page 3 of 4 Pages

Boring No. FD87-6 Desig. B Diam. (Casing) 3¼" Hollow Stem Auger

Co-ordinates: N See sketch E

Elevation Top of Boring 12.00 M.S.L. | Hammer Wt. 140 ± | Boring Started 1/6/87

Total Overburden Drilled 25.00 Feet | Hammer Drop 30" | Boring Completed 1/6/87

Elevation Top of Rock — M.S.L. | Casing Left 0'

Total Rock Drilled 0 Feet | Subsurface Water Data | Page 4

Elevation Bottom of Boring -13.00 M.S.L. | Obs. Well no

Total Depth of Boring 25.00 Feet | Drilled By Todd + Saarinen

Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45

Core Recovered 0 Ft: — Diam. — In. | Inspected By: Beddoe

Soil Samples 1 3/8 In. Diam. 6 No. | Classification By: Beddoe

Soil Samples — In. Diam. — No. | Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT / CORE RECVY	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0			REC	1	Sample using 1 3/8" ID by 2' long split spoon sampler.	Light brown f SAND, trace f GRAVEL, trace SILT (moist, nonplastic) medium dense SP
	S-1	1 3/8"	50%	6		
				11		
2.0				11		
					3¼" ID Hollow Stem Auger to 5.0'. Augering easy throughout boring	
5.0						Similar soils - SP - with 3" layer of dark grey CLAY and SILT, trace f. SAND (wet, plastic) medium stiff CL
	S-2	1 3/8"	40%	3	Sample as above	
				2		
				3		
7.0				4		
					Auger to 10.0'	
10.0						

GENERAL REMARKS:

Elevations as surveyed in the field by MFL using benchmark near FD-5. (FD87-20).

All soil sampling performed in accordance with ASTM D1586 except as noted.

Site: Roughans Point

Boring No. FD87-6

DEPTH (1" = 2')	CORE/SAMPLE NO.	SIZE	REC	BLOWS PER 6"	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0	S-3	$1\frac{3}{8}$"	75%	7 / 3 / 2 / 3	Sample using 1 3/8" ID by 2' long split spoon sampler	SP as above; no sample retained. Dark brown CLAY and SILT, little ORGANICS (roots, grass), trace f. SAND (wet, plastic) medium stiff CL. Note natural sulphur odor "PEAT"
12.0					3 1/4" Hollow Stem Auger to 15'	
15.0	S-4	$1\frac{3}{8}$"	45%	5 / 6 / 9 / 9	Sample as above	Dark brown mf SAND, some cf GRAVEL, trace SILT, trace CLAY (saturated, very slightly plastic) medium dense SP
17.0					Auger to 20'	
20.0	S-5	$1\frac{3}{8}$"	45%	17 / 13 / 11 / 13	Sample as above	Dark brown cmf SAND and cf GRAVEL, trace SILT, trace CLAY (sat., very slightly plastic) medium dense SW
22.0					Auger to 23.0'	
23.0	S-6	$1\frac{3}{8}$"	75%	15 / 16 / 15 / 12	Sample as above	Similar Soils with no CLAY - SW
25.0					Boring Terminated at 25.0' 1/6/86	

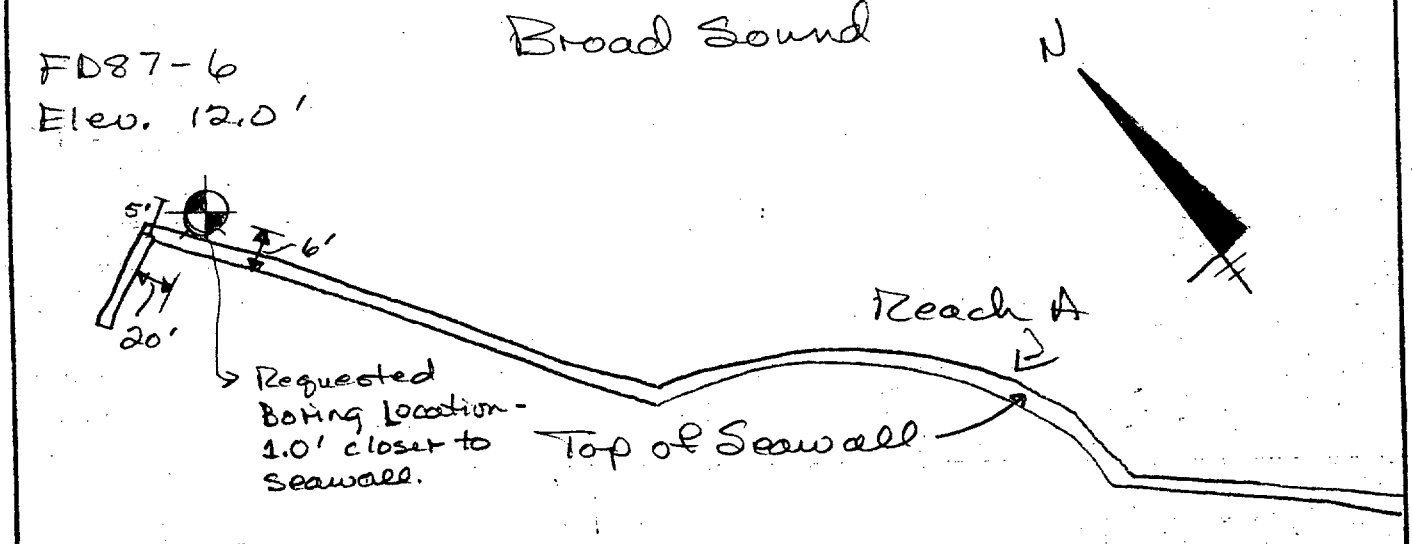
Site: Roughans Point
Boring No: FD87-6

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/6/87	4:00	23.0'	25.0'	13.0'	-1.0'	in augers after boring terminated

Note: Depths are in feet below original ground

BORING LOCATION SKETCH Not to Scale



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site Roughans Point, Revere MA PROJECT NO. D.O.#0018

Page 1 of 4 Pages

Hole No. FD87-7 Diam. (Casing) 3/4" ID Hollow Stem Auger

Boring Started 1/7/87

Co-ordinates: * see * sketch

Boring Completed 1/7/87

Drilled by Todd + Saarinen

Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole -1.60 M.S.L.

Total Overburden Drilled 15.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -16.6 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; — Diam. — In.

Soil Samples 1 3/8 In. Diam. 5 No.

Soil Samples — In. Diam. — No.

Casing Left in Place 0 Feet

Water Table Depth surface

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	13.0	3 1/4" ID Hollow Stem Auger with
		1 3/8" ID split spoon sampling on
		5'. intervals
13.0	15.0	1 3/8" ID split spoon sampler

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Prepared by T Beddoe
Field Data

Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughans Point, Revere MA Page 4 of 4 Pages

Boring No. FD87-7 Desig. G Diam. (Casing) 3¼" ID Hollow stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring -1.40 M.S.L. Hammer Wt. 140# Boring Started 1/7/87

Total Overburden Drilled 15.0 Feet Hammer Drop 30" Boring Completed 1/7/87

Elevation Top of Rock — M.S.L. Casing Left 0' Subsurface Water Data Page 4

Total Rock Drilled 0 Feet

Elevation Bottom of Boring -16.4 M.S.L. Obs. Well no

Total Depth of Boring 15.0 Feet Drilled By Todd + Seahines

Core Recovered 0 % No. Boxes 0 Mfg. Des. Drill CME 45

Core Recovered 0 Ft. — Diam. — In. Inspected By: Beddoe

Soil Samples 1 3/8 In. Diam. 5 No. Classification By: Beddoe

Soil Samples — In. Diam. — No. Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / CORE RECVY	BLOWS PER 6"	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0'			REC	11	Sample using 1 3/8" ID by 2' long split spoon sampler	Medium brown cf GRAVEL, some mf SAND, trace SHELL FRAGMENTS, trace SILT (saturated, nonplastic) medium
	S-1	1 3/8"	25%	13		
2.0'				16		
				8	3¼" ID Hollow Stem Auger to 5.0' Augering easy throughout boring.	dense GW
5.0'						
	S-2	1 3/8"	50%	34	Sample as above	Dark grey GW as above
				17		
7.0'				12		
				11	Auger to 10.0'	
10.0'						

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5. (FD87-20)
All soil sampling performed in accordance with ASTM D1586 except as noted.

DEPTH		CORE/SAMPLE NO.	SIZE	REC	BLOWS PER 6"	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0'	1" = 2'						
10.5'		S-3A	1 3/8"	100%	34	Sample using 1 3/8" ID by 2' long split spoon sampler	Dark grey mf SAND, trace SILT, trace SHELL FRAGMENTS (saturated, non-plastic) very dense SP
		S-3B	1 3/8"	100%	15, 8, 9		
12.0'						3 1/4" Hollow Stem Auger to 13.0'	Dark grey cmf SAND and f GRAVEL, trace SILT (saturated, non-plastic) medium dense SW
13.0'		S-4	1 3/8"	100%	56, 24, 29, 31	Sample as above	Med. grey cf GRAVEL and cmf SAND, trace SILT (saturated, nonplastic) very dense GW
15.0'						Boring Terminated at 15.0', 1/7/87	

Site: Roughans Point
Boring No: FD87-7

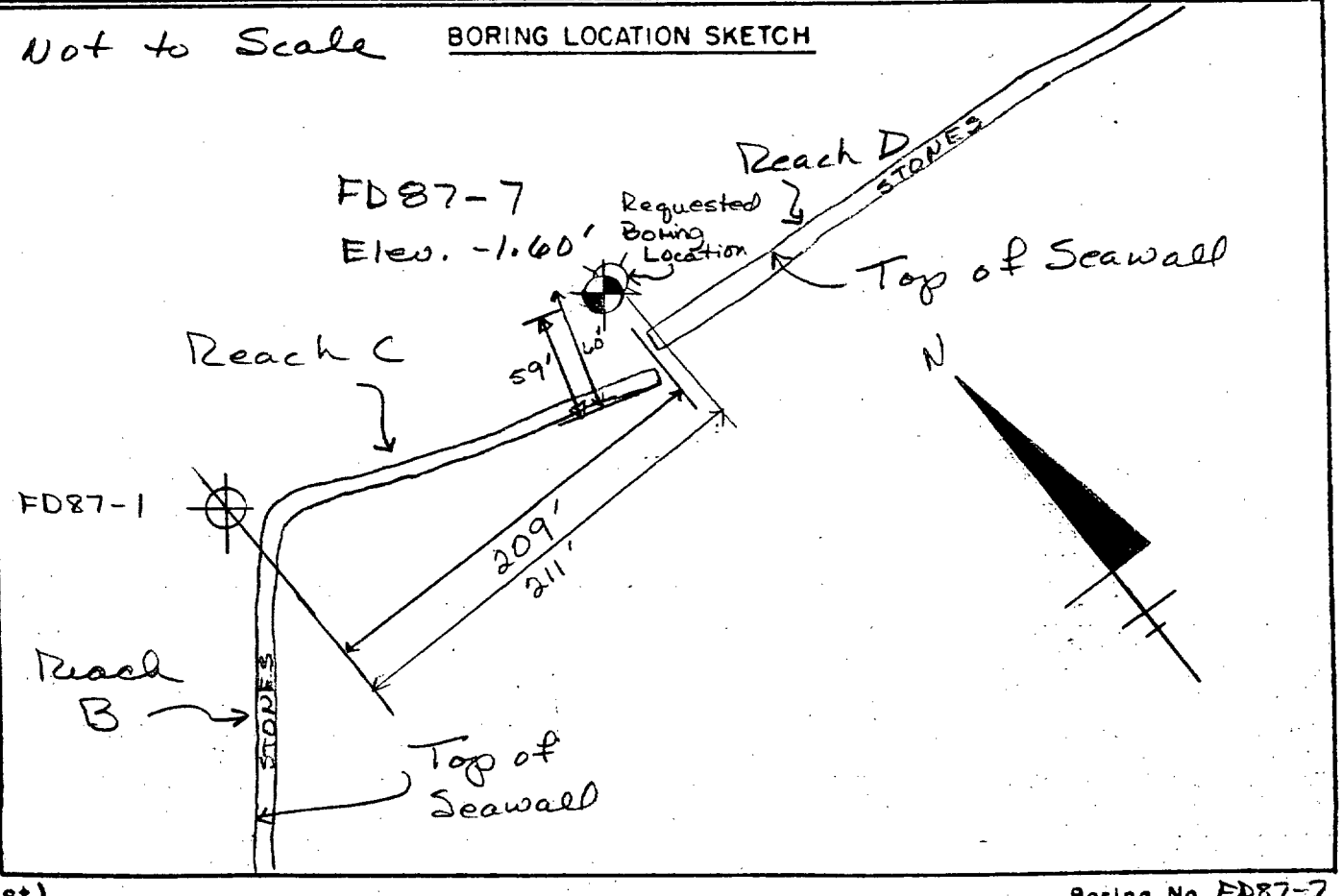
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/7/87	12:13	13.0'	15.0'	1.5'	-3.1'	in augers after boring termination
1/7/87	12:27	0.0'	15.0'	0.0'	-1.6'	after augers were pulled

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. FD27-8 Diam. (Casing) 3¼" ID Hollow Stem Auger — Boring Started 1/7/87

Co-ordinates: X See & Sketch — Boring Completed 1/7/87

Drilled by Cambridge & Murdock — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole 0.80 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 25.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -24.2 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 25.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; — Diam. — In.

Soil Samples 1 3/8 In. Diam. 7 No.

Soil Samples — In. Diam. — No. — Water Table Depth 0.5'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	23.0	3¼" ID Hollow Stem Auger with
		1 3/8" ID Split Spoon Sampling on
		5' intervals.
23.0	25.0	1 3/8" ID Split Spoon Sampler

INDEX

Prepared by TA Beddoe — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughan's Point, Revere MA Page 2 of 4 Pages

Boring No. FD87-8 Desig. H Diam. (Casing) 3¼" ID Hollow stem Auger

Co-ordinates: N sketch E

Elevation Top of Boring 0.80 M.S.L. | Hammer Wt. 140# | Boring Started 1/7/87
Total Overburden Drilled 25.0 Feet | Hammer Drop 30" | Boring Completed 1/7/87
Elevation Top of Rock — M.S.L. | Casing Left 0' | Page 4
Total Rock Drilled 0 Feet | Subsurface Water Data —
Elevation Bottom of Boring -24.2 M.S.L. | Obs. Well no
Total Depth of Boring 25.0 Feet | Drilled By Cambridge + Murdock
Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45
Core Recovered 0 Ft. — Diam. — in. | Inspected By: Beddoe
Soil Samples 1 3/8 in. Diam. 7 No. | Classification By: Beddoe
Soil Samples — in. Diam. — No. | Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / CORE RECVY	BLOWS PER FT.	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0'						
1' - 2'	S-1	1 3/8"	12" EC 30%	3 7 19 26	Sample using 1 3/8" ID by 2' long split spoon sampler	Red brown c m f SAND and f GRAVEL, trace SHELL FRAGMENTS, trace SILT (saturated, nonplastic) dense SW
2.0'						
					3¼" ID Hollow stem auger to 5'. Note boulders in first 5.0'.	
5.0'	S-2A	1 3/8"	100%	6 4	Sample as above	Dark brown SILT and CLAY, trace f SAND, trace ORGANICS (roots), trace f GRAVEL (saturated, plastic) stiff MH "PEAT" Note sulphur odor (natural).
6.0'	S-2B	1 3/8"	100%	6 7		
7.0'					Auger to 10.0' Augering easy for remainder of boring	Medium brown m f SAND, trace c f GRAVEL, trace SILT (saturated, nonplastic) medium dense SP
10.0'						

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5. (FD87-20).

All soil sampling performed in accordance with ASTM D1586 except as noted.

DEPTH	CORE/SAMPLE NO	SIZE	DEPTH RANGE / REC	BLOWS PER 6" / CORE RECOVERY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0' – 12.0' (1" = 2')	S-3	1 3/8"	50%	6, 7, 13, 10	Sample using 1 3/8" ID by 2' long splitspoon sampler	Soils Similar to S-2B SP
12.0' – 15.0'					3 1/4" ID Hollow Stem Auger to 15.0'	
15.0' – 17.0'	S-4	1 3/8"	50%	14, 12, 6, 5	sample as above	Dark brown f SAND, little SILT, trace c GRAVEL, trace CLAY, trace ORGANICS (roots) (saturated, very slightly plastic) medium dense SP-SM Note sulphur odor (natural).
17.0' – 20.0					Auger to 20.0'	
20.0 – 22.0	S-5	1 3/8"	60%	3, 8, 8, 9	sample as above	SP-SM as above
22.0 – 23.0					Auger to 23.0'	
23.0 – 25.0	S-6	1 3/8"	100%	8, 12, 20, 21	sample as above	Med. grey-brown mf SAND, trace f GRAVEL, trace SILT (saturated, nonplastic) dense SP
25.0					Boring Terminated at 25.0' 1/7/87	

Site: Roughan's Point
Boring No: FD87-8

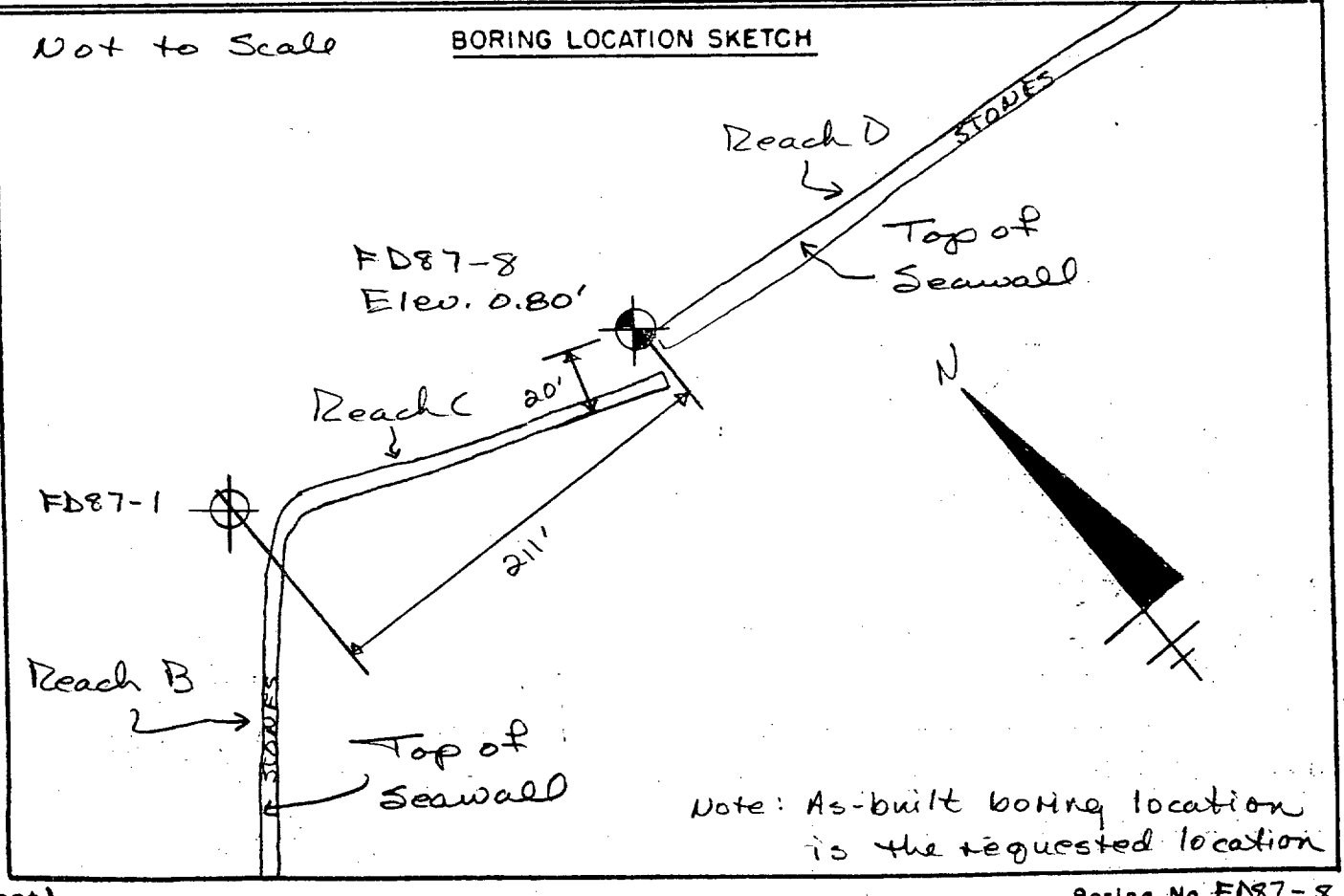
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/7/87	12:10	23.0	25.0	4.0	-3.2	in augers after boring terminated
1/7/87	12:24	0.0	25.0	0.5	0.3	after augers were pulled

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



Note: As-built boring location is the requested location

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. b.o.#0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. FD87-9 Diam. (Casing) 3/4"ID Hollow Stem Auger — Boring Started 1/7/87

Co-ordinates: ~~X~~ see ~~X~~ sketch — Boring Completed 1/7/87

Drilled by Todd & Saarinen — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berm.

Elevation Top of Hole -1.5 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 15.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -13.5 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; — Diam. — in.

Soil Samples 13/8 in. Diam. 6 No.

Soil Samples — in. Diam. — No. — Water Table Depth surface

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	13.0	3/4" ID Hollow Stem Auger with
		1 3/8" ID Split Spoon Sampling on
		5' intervals
13.0	15.0	1 3/8" ID Split Spoon Sampler

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Prepared by T A Beddoe — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Rougham's Point, Revere MA Page 2 of 4 Pages
Boring No. FD87-9 Desig. I Diam. (Casing) 3 1/4" ID Hollow Stem Auger
Co-ordinates: N see sketch E

Elevation Top of Boring -1.50 M.S.L.
Total Overburden Drilled 15.0 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring -13.5 M.S.L.
Total Depth of Boring 15.0 Feet
Core Recovered 0 % No. Boxes 0
Core Recovered 0 Ft : Diam. — In.
Soil Samples 1 3/8 In. Diam. 6 No.
Soil Samples — In. Diam. — No.

Hammer Wt. 140 # Boring Started 1/7/87
Hammer Drop 30"
Casing Left 0' Boring Completed 1/7/87
Subsurface Water Data Page 4
Obs. Well no
Drilled By Todd + Saarinen
Mfg. Des. Drill CME 45
Inspected By: Beddoe
Classification By: Beddoe
Classification By: —

DEPTH 0.0	1" = 2'	CORE/SAMPLE NO.	SIZE	REC	BLOWS PER 6"	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0–2.0		S-1	1 3/8"	40%	4, 13, 12, 9	Sample using 1 3/8" ID by 2' long split spoon sampler	Med. brown c-f GRAVEL and c-f SAND, trace SILT, trace SHELL FRAGMENTS (saturated, nonplastic) medium dense GW
2.0–5.0						3 1/4" ID Hollow Stem Auger to 5.0' Augering slightly difficult due to coarse soils	
5.0–7.0		S-2	1 3/8"	35%	14, 16, 19, 14	Sample as above	Light rust-brown GW as above
7.0–10.0						Auger to 10.0' Augering easy for remainder of boring.	

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5 (FD87-20).

All soil sampling performed in accordance with ASTM D1586 except as noted.

FORM 58 (Test)

Boring No. FD87-9

Site	Boring No.	Page
Roughans Point	FD87-9	3 of 4

DEPTH		CORE/SAMPLE NO.	SIZE	DEPTH RANGE / REC	BLOWS PER 6" / CORE RECOVERY	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0'	1" = 2'						
10.0'–11.5'		S-3A	1 3/8"	100%	19 / 26 / 47	Sample using 1 3/8" ID by 2' long split spoon sampler	Light brown cmf SAND, trace f GRAVEL, trace SILT (wet, nonplastic) very dense SP
11.5'–12.0'		S-3B	1 3/8"	100%	51		Light brown f SAND, trace c GRAVEL, trace SILT (wet, nonplastic) very dense SP
12.0'–13.0						3 1/4" ID Hollow stem Auger to 13.0'	
13.0–14.0		S-4A	1 3/8"	100%	14 / 16	Sample as above	Light brown mf SAND, trace SILT (saturated, nonplastic) med. dense - SP
14.0–15.0		S-4B	1 3/8"	100%	29 / 61		Light brown cf GRAVEL and cmf GRAVEL, trace SILT (saturated, nonplastic) very dense GW
15.0						Boring Terminated at 15.0', 1/7/87	

58A(Test)

Boring No. FD87-9

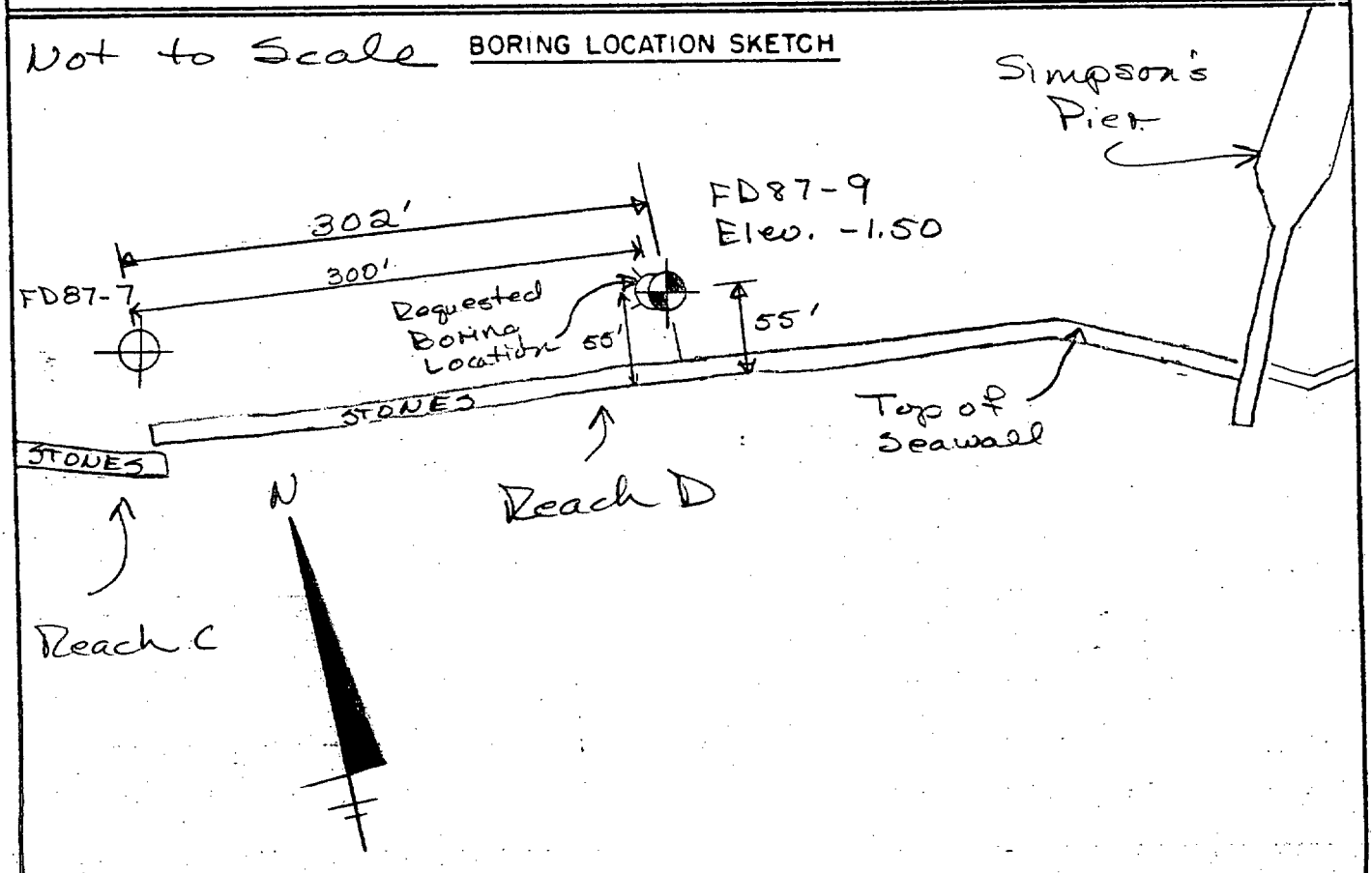
Site: Roughan's Point
Boring No: FD87-9

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/7/87	4:15	13.0'	15.0'	5.0'	-6.5'	In augers after boring terminated
1/7/87	4:30	0.0'	15.0'	0.0'	-1.5	after augers were pulled

Note: Depths are in feet below original ground

Not to Scale BORING LOCATION SKETCH



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O.#0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. FD87-10 Diam. (Casing) 3¼" Hollow Stem Auger — Boring Started 1/7/87

Co-ordinates: X see X sketch — Boring Completed 1/8/87

Drilled by Cambridge & Murdock — Report Submitted

Purpose of Exploration Determining foundation conditions for proposed revetments, sluice gate and earth berm

Elevation Top of Hole 1.50 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 25.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -23.5 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 25.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; Diam. — in.

Soil Samples 13/8 in. Diam. 6 No.

Soil Samples — in. Diam. — No. — Water Table Depth 5.3'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	23.0	3¼" ID Hollow Stem Auger with
		13/8" ID Split Spoon Sampling on
		5' intervals.
23.0	25.0	13/8" ID Split Spoon Sampler

INDEX

Prepared by T A Reddoe (Field Data) — (Lab. Data)

Submitted by Atlantic Testing Labs, Ltd

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Boughams Point, Revere MA Page 2 of 4 Pages

Boring No. FD87-10 Desig. J Diam. (Casing) 3¼" ID Hollow Stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring 1.50 M.S.L. | Hammer Wt. 140# | Boring Started 1/7/87

Total Overburden Drilled 25.0 Feet | Hammer Drop 30" | Boring Completed 1/8/87

Elevation Top of Rock — M.S.L. | Casing Left 0'

Total Rock Drilled 0 Feet | Subsurface Water Data — Page 4

Elevation Bottom of Boring -23.5 M.S.L. | Obs. Well no

Total Depth of Boring 25.0 Feet | Drilled By Cambridge + Murdock

Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45

Core Recovered 0 Ft : — Diam. — in. | Inspected By: Beddoe

Soil Samples 1 3/8 in. Diam. 6 No. | Classification By: Beddoe

Soil Samples — in. Diam. — No. | Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / CORE REC'VY	BLOWS PER FT.	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0' to 2.0'	S-1	1 3/8"	REC 15%	3 7 13 15	Sample using 1 3/8" ID by 2' long split spoon sampler	Med. brown c m & SAND, little c & GRAVEL, trace SHELL FRAGMENTS, trace SILT (wet, nonplastic) medium dense SW
2.0' to 5.0'					3¼" ID Hollow Stem Auger to 5.0' Augering easy throughout boring.	
5.0' to 7.0'	S-2	1 3/8"	90%	8 8 9 13	Sample as above	Light brown f SAND, trace f GRAVEL, trace SILT (saturated, non-plastic) medium dense SP
7.0' to 10.0'					Auger to 10.0'	

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5 (FD87-20)

All soil sampling performed in accordance with ASTM D1586 except as noted.

Site: Roughans Point

Boring No. FD87-10

Page 3 of 4

DEPTH (10.0' – 2')	CORE/SAMPLE NO.	SIZE	REC	BLOWS PER 6"	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0'–12.0'	S-3	1 3/8"	70%	31, 27, 21, 21	Sample using 13/8" ID by 2' long split spoon sampler	Medium brown cf GRAVEL and cmf SAND, trace SILT (saturated, nonplastic) dense, GW with 2" layer of soils similar to S-2
12.0'–15.0'					3¼" ID Hollow stem Auger to 15.0'	
15.0'–17.0'	S-4	1 3/8"	80%	26, 31, 32, 30	Sample as above	Medium grey cmf SAND and cf GRAVEL, trace SILT (saturated, nonplastic) very dense SW with 2" layer of SILT and CLAY, trace f SAND, trace ORGANICS (roots) (saturated, plastic) MH - Note sulphur odor (natural).
17.0'–20.0'					Auger to 20.0' where encounter difficulty with flowing sands. Attempts to wash out augers with hose were unsuccessful before the returning tide forced us off site. Pull augers. Explorations end 1/7/87	
20.0'–22.0	S-5	1 3/8"	25%	34, 25, 25, 16	Explorations begin 1/8/87. Readvance augers from surface to 20', same location. wash out augers using hose. Sample as above.	Medium brown f GRAVEL and cmf SAND, trace SILT (sat., nonplastic) dense GP
22.0–23.0					Auger to 23.0'	
23.0–25.0	S-6	1 3/8"	75%	31, 34, 26, 18	Sample as above.	Light brown cmf SAND, little f. GRAVEL, trace SILT (wet, nonplastic) very dense - SW
25.0					Boring Terminated at 25.0' 1/8/87	

Site: Boughan's Point
Boring No: FD87-10

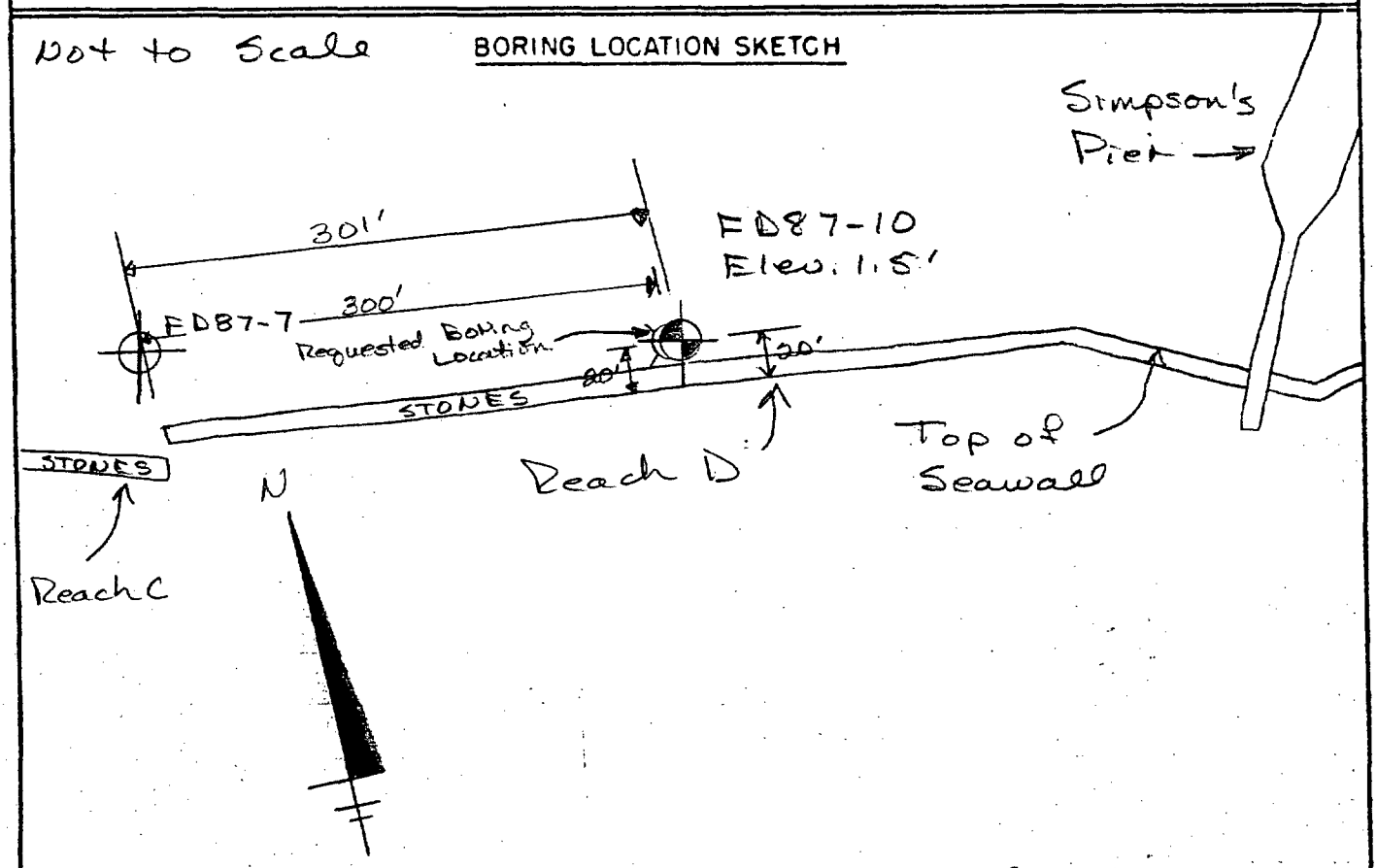
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/8/87	10:20	23.0'	25.0	5.3'	-6.8'	in augers after boring terminated

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. FD87-11 Diam. (Casing) 3¼" ID Hollow Stem Auger — Boring Started 1/8/87

Co-ordinates: * see & sketch — Boring Completed 1/8/87

Drilled by Todd & Saarinen — Report Submitted

Purpose of Exploration Determine foundation conditions for proposed revetments, sluice gate and earth berm.

Elevation Top of Hole 4.00 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 25.00 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -21.00 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 25.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; — Diam. — In.

Soil Samples 1 3/8 In. Diam. 6 No.

Soil Samples — In. Diam. — No. — Water Table Depth 6.5'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	23.0	3¼" ID Hollow Stem Auger with
		1 3/8" ID Split Spoon sampling at
		5.0' Intervals
23.0	25.0	1 3/8" ID Split Spoon Sampler

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Prepared by T A Beddoe (Field Data) — (Lab. Data)

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U.S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughan's Point, Revere MA Page 3 of 4 Pages

Boring No. ED87-11 Desig. L Diam. (Casing) 3¼" ID Hollow Stem Auger

Co-ordinates: N See Sketch E

Elevation Top of Boring 4.00 M.S.L. | Hammer Wt. 140# | Boring Started 1/8/87
Total Overburden Drilled 25.00 Feet | Hammer Drop 30" | Boring Completed 1/8/87
Elevation Top of Rock — M.S.L. | Casing Left 0' |
Total Rock Drilled 0 Feet | Subsurface Water Data — | Page 4
Elevation Bottom of Boring -21.00 M.S.L. | Obs. Well NO
Total Depth of Boring 25.00 Feet | Drilled By Todd + Soahrem
Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45
Core Recovered 0 Ft. — Diam. — In. | Inspected By: Beddoe
Soil Samples 1 3/8 In. Diam. 6 No. | Classification By: Beddoe
Soil Samples — In. Diam. — No. | Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / REC	BLOWS PER FT. / CORE RECVY	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0						
2.0'	S-1	1 3/8"	45%	2 3 13 17	Sample using 1 3/8" ID by 2' long split spoon sampler.	Med. grey cmF SAND, some f. GRAVEL, trace SHELL FRAGMENTS, trace SILT (wet nonplastic) medium dense SD
5.0'					3¼" ID Hollow Stem Auger to 5.0' Augering easy throughout boring.	
7.0'	S-2	1 3/8"	50%	9 11 12 12	Sample as above	Med. brown mF SAND, some cF GRAVEL, trace SILT (saturated, nonplastic) medium dense SP
10.0'					Auger to 10.0'	

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5 (FD87-80).
All soil sampling performed in accordance with ASTM D1586 except as noted.

Depth	Core/Sample No.	Size	% Rec	Blows per 6"	6" Sampling and Coring Operations	Classification of Materials
10.0'–12.0'	S-3	$1\frac{3}{8}$"	100%	19, 29, 34, 51	Sample using 1 3/8" ID by 2' long split spoon sampler	Med. brown cmf SAND, some cf GRAVEL, trace SILT (wet, nonplastic) very dense SW
12.0'–15.0'					3 1/4" ID Hollow stem Auger to 15.0', noting boulders from 10'-13'. Flowing sands at 15'; clean out augers with hose.	
15.0'–17.0'	S-4	$1\frac{3}{8}$"	100%	14, 10, 7, 23	Sample as above	Med. brown mf SAND, little cf GRAVEL, trace SILT (saturated, nonplastic) med. dense – SP
17.0'–20.0					Auger to 20.0'	
20.0–22.0	S-5	$1\frac{3}{8}$"	80%	20, 24, 8, 9	Sample as above	SP as above
22.0–23.0					Auger to 23.0'	
23.0–25.0	S-6	$1\frac{3}{8}$"	80%	7, 7, 7, 6	Sample as above	Med. brown mf SAND, trace SILT (saturated, nonplastic) medium dense SP
25.0					Boring terminated at 25.0' 1/8/87	

Site: Roughan's Point
Boring No: FD87-11

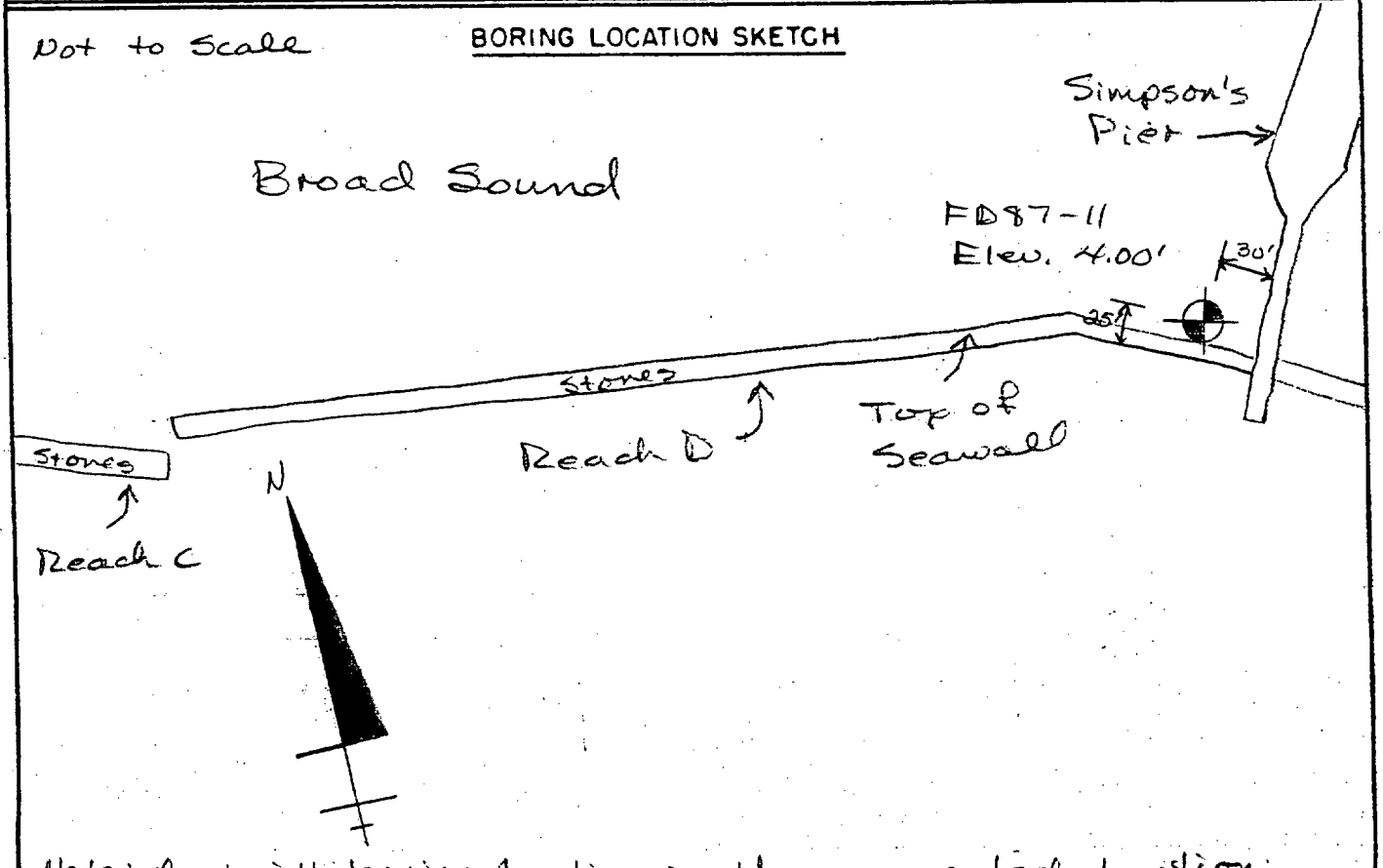
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/8/87	11:40	23.0	25.0	6.5'	-2.5	in augers after boring terminated

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

Dot to Scale



Note: As-built boring location is the requested location.

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. ED87-12 Diam. (Casing) 3¼"ID Hollow Stem Auger — Boring Started 1/8/87

Co-ordinates: X see X sketch — Boring Completed 1/8/87

Drilled by Todd & Saarinen — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berm.

Elevation Top of Hole 1.00 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 15.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -14.0 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; — Diam. — In.

Soil Samples 13/8 In. Diam. 6 No.

Soil Samples — In. Diam. — No. — Water Table Depth 1.5'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	13.0	3¼"ID Hollow Stem Auger with
		1 3/8" ID Split Spoon Sampling at
		5' intervals
13.0	15.0	1 3/8" ID Split Spoon Sampling

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Prepared by TMBeddoe — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughan's Point, Revere MA Page 3 of 4 Pages

Boring No. ED87-12 Desig. M Diam. (Casing) 3¼" ID Hollow Stem Auger

Co-ordinates: see sketch

Elevation Top of Boring 1.00 M.S.L. Hammer Wt. 140# Boring Started 1/8/87

Total Overburden Drilled 15.00 Feet Hammer Drop 30" Boring Completed 1/8/87

Elevation Top of Rock — M.S.L. Casing Left 0'

Total Rock Drilled 0 Feet Subsurface Water Data — Page 4

Elevation Bottom of Boring -14.0 M.S.L. Obs. Well NO

Total Depth of Boring 15.0 Feet Drilled By Todd + Saarinen

Core Recovered 0 % No. Boxes 0 Mfg. Des. Drill CME 45

Core Recovered 0 Ft: — Diam. — in. Inspected By: Beddoe

Soil Samples 1 3/8 in. Diam. 6 No. Classification By: Beddoe

Soil Samples — in. Diam. — No. Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	REC	BLOWS PER FT. CORE RECVY	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0'							
	S-1	1 3/8"	20'		4 11 13 18	Sample using 1 3/8" ID by 2' long split spoon sampler	Med. grey-brown cf GRAVEL and cmf SAND, trace SILT (saturated, nonplastic) medium dense GW
2.0'							
						3¼" ID Hollow Stem Auger to 5.0' noting cobbles and boulders from surface to 5.0'	GW as above. No sample retained as inspector was at other drill rig. Composition confirmed by driller.
5.0'							
	S-2	1 3/8"	20'		2 1 2 3	Sample as above	3" Dark brown SILT, trace CLAY, trace f SAND, trace ORGANICS (wood chips) (saturated, very slightly plastic) med. stiff ML
7.0'							
						Auger to 10.0' Augering easy for remainder of boring.	in 2" Med. grey SILT and CLAY, trace mf SAND, trace f GRAVEL trace ORGANICS (roots) (saturated, plastic) med. stiff MH Note natural sulphur odor.
10.0'							

GENERAL REMARKS:
Elevations as-surveyed in the field by ATL using benchmark near FD-5 (FD87-20).

All soil sampling performed in accordance with ASTM D1586 except as noted.

Site	Boring No.	Page
Roughan's Point	FD87-12	3 of 4

Depth 1' · 2'	Core/Sample No	Size	Depth/Range REC	Blows per 6" / Core Rec.	6" Sampling and Coring Operations	Classification of Materials
10.0'–11.0'	S-3A	1 3/8"	75%	1 2	Sample using 13/8" ID by 2' long split spoon sampler	Dark grey SILT and CLAY, some mf SAND, trace OR-GANICS (red wood chips, roots), trace f. GRAVEL, trace SHELL FRAGMENTS (saturated, plastic) soft MH "PEAT"
11.0'–12.0'	S-3B	1 3/8"	75%	2 3		change at 11.0' to Light blue-grey CLAY, some SILT, trace mf SAND (wet, plastic) medium stiff CL
12.0'–13.0'					3 1/4" ID Hollow stem Auger to 13.0'	
13.0'–14.0'	S-4A	1 3/8"	50%	8 13	sample as above	Dark brown mf SAND, little SILT, trace f GRAVEL, trace CLAY (saturated, very slightly plastic) med. dense SP-SM
14.0'–15.0'	S-4B	1 3/8"	50%	23 24		change @ 14.0' to Medium green-grey with rust mottles SILT, trace fine SAND (moist, nonplastic) dense ML
15.0'					Boring Terminated at 15.0' 1/8/87.	

Site: Roughan's Point
Boring No: FD87-12

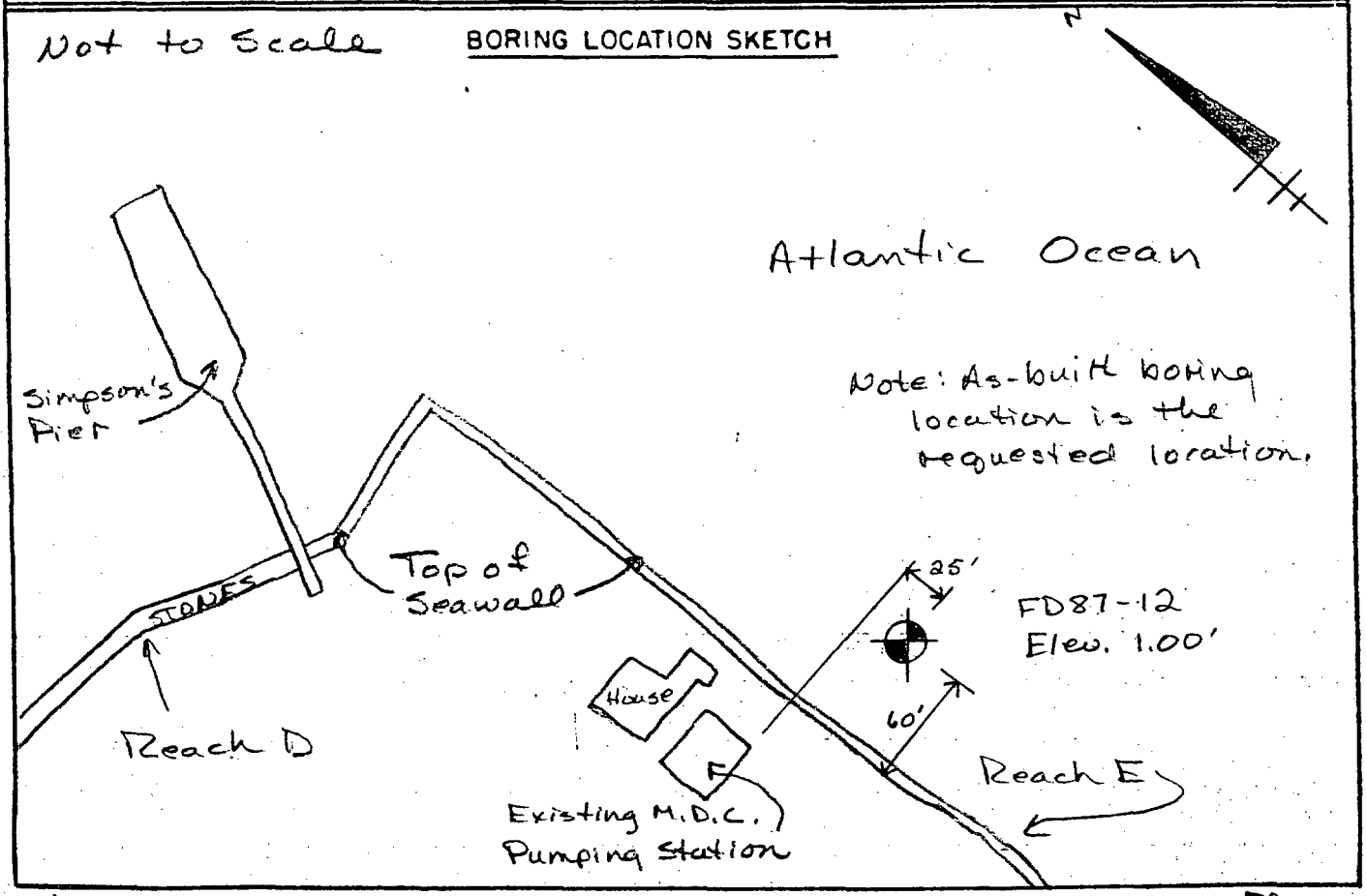
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/8/87	4:35	13.0	15.0	1.5	-0.5	In augers after boring terminated

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. ED87-13 Diam. (Casing) 8¼" ID Hollow Stem Auger — Boring Started 1/8/87

Co-ordinates: * see * sketch — Boring Completed 1/8/87

Drilled by Cambridge & Murdock — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berm

Elevation Top of Hole 0.90 M.S.L. — Casing Left in Place 0 Feet
Total Overburden Drilled 15.0 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -14.1 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 15.0 Feet
Core Recovered 0 %
Core Recovered 0 Ft.: — Diam. — In.
Soil Samples 13/8 In. Diam. 4 No.
Soil Samples — In. Diam. — No. — Water Table Depth 5.5'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	13.0	8¼" ID Hollow Stem Auger with
		1⅜" ID Split Spoon Sampling at
		5.0' intervals
13.0	15.0	1⅜" ID Split Spoon Sampler

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Prepared by T.A. Beddoe — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
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FIELD LOG OF TEST BORING

Site Boughan's Point, Revere MA Page 2 of 4 Pages

Boring No. FD87-13 Desig. K Diam. (Casing) 3¼" ID Hollow Stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring 0.90 M.S.L.
Total Overburden Drilled 15.0 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring -14.1 M.S.L.
Total Depth of Boring 15.0 Feet
Core Recovered 0 % No. Boxes 0
Core Recovered 0 Ft. — Diam. — In.
Soil Samples 1 3/8 In. Diam. 4 No.
Soil Samples — In. Diam. — No.

Hammer Wt. 140# Boring Started 1/8/87
Hammer Drop 30" Boring Completed 1/8/87
Casing Left 0'
Subsurface Water Data — Page 4
Obs. Well NO
Drilled By Cambridge + Murdock
Mfg. Des. Drill CME 45
Inspected By: Beddoe
Classification By: Beddoe
Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / REC	BLOWS PER 6" / CORE RECOVERY	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0'						
2.0'	S-1	1 3/8"	15%	4 8 8 9	Sample using 1 3/8" ID by 2' long split spoon sampler	Med. grey brown crse sand, some f GRAVEL, trace SHELL FRAGMENTS, trace SILT (wet, nonplastic) medium dense SW
5.0'					3¼" ID Hollow Stem Auger to 5.0'. Augering easy throughout boring	
7.0'	S-2	1 3/8"	50%	6 5 2 2	Sample as above	SW as above — saturated
10.0'					Auger to 10.0' Note boulders from 7.5' to 9.5'	

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-3. (FD87-20).
All soil sampling performed in accordance with ASTM D1586 except as noted.

Site		Boring No.	Page 3 of 4
Roughan's Point		FD87-13	

DEPTH 10.0'	1" = 2'	CORE/SAMPLE NO	SIZE	REC	BLOWS PER 6"	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0'–12.0'		S-3	1 3/8"	80%	31 26 28 19	Sample using 1 3/8" ID by 2' long split spoon sampler,	Medium brown mf SAND, trace of GRAVEL, trace SILT (saturated, nonplastic) dense SP
12.0'–13.0'						8 1/4" ID Hollow Stem Auger to 13.0'	
13.0'–15.0'		S-4	1 3/8"	30%	26 24 25 20	Sample as above	Dark grey cmf SAND, little f GRAVEL, trace SILT (saturated, nonplastic) dense SW
15.0'						Boring Terminated at 15.0' 1/8/87	

BA (Test) Boring No FD87-13

Site: Roughan's Point
Boring No: FD87-13

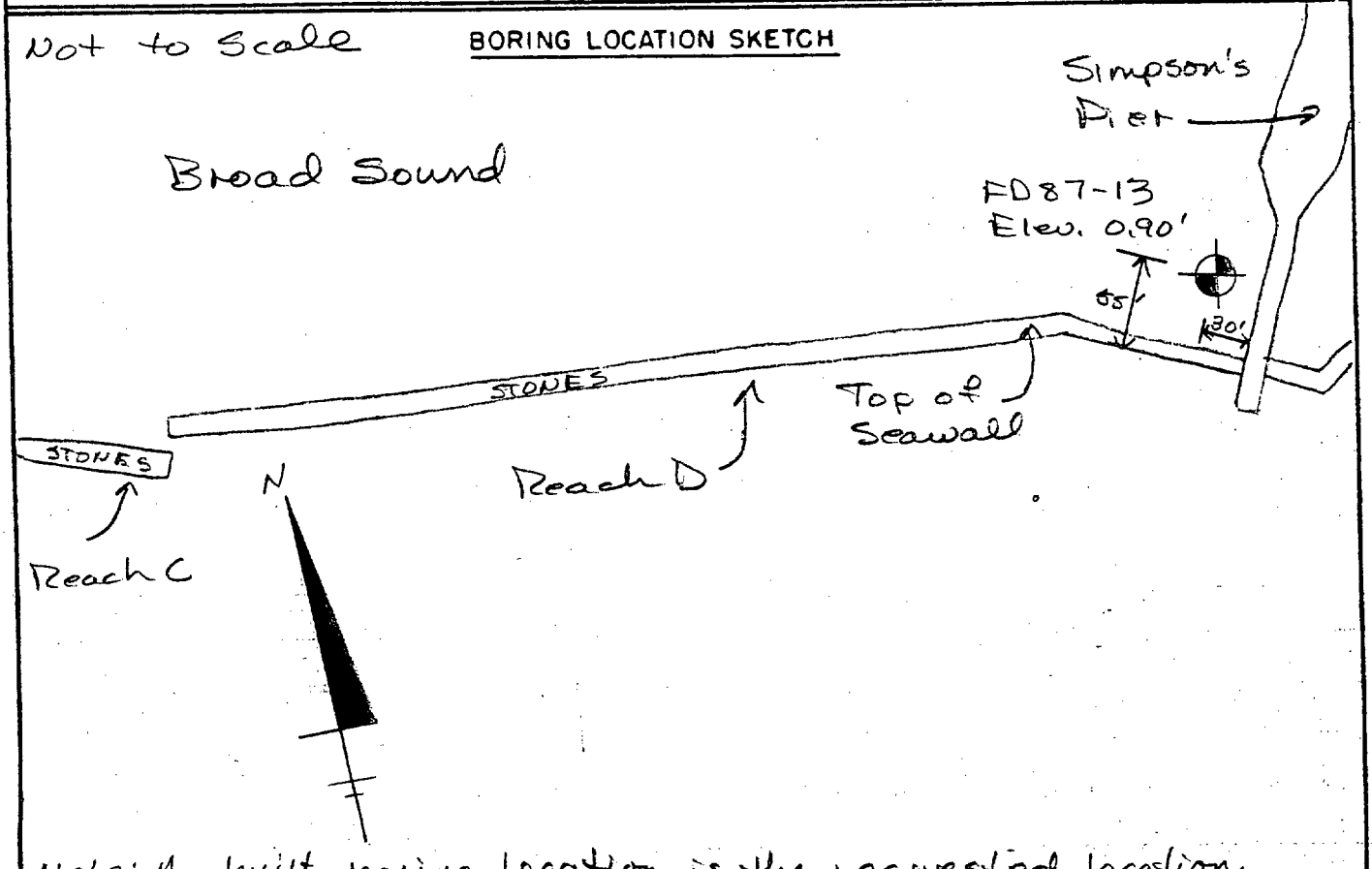
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/8/87	4:45	18.0'	15.0'	5.5'	-4.6'	in augers after boring terminated

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



Note: As-built boring location is the requested location.

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FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Roughan's Point, Revere MA — Page 1 of 5 Pages

Hole No. ED87-14 Diam. (Casing) 3¼" ID Hollow Stem Augers — Boring Started 1/14/87

Co-ordinates: N see E sketch — Boring Completed 1/14/87

Drilled by Cambridge & Murdock — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berm

Elevation Top of Hole 5.40 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 37.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -31.6 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 37.0 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; — Diam. — in.

Soil Samples 1 3/8 in. Diam. 11 No.

Soil Samples — in. Diam. — No. — Water Table Depth 8.0'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	35.0	3¼" Hollow Stem Auger with
		1 3/8" ID Split Spoon Sampling at
		5' intervals
35.0	37.0	1 3/8" ID Split Spoon Sampler

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Prepared by T.A. Beddoe — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughans Point, Revere, MA Page 2 of 5 Pages

Boring No. FD87-14 Desig. W Diam. (Casing) 3¼" ID Hollow Stem Auger

Co-ordinates: N sketch E

Elevation Top of Boring 5.40 M.S.L. | Hammer Wt. 140# | Boring Started 1/14/87
Total Overburden Drilled 37.0 Feet | Hammer Drop 30" | Boring Completed 1/14/87
Elevation Top of Rock — M.S.L. | Casing Left 0' |
Total Rock Drilled 0 Feet | Subsurface Water Data | Page 5
Elevation Bottom of Boring -31.6 M.S.L. | Obs. Well no
Total Depth of Boring 37.0 Feet | Drilled By Cambridge + Murdock
Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45
Core Recovered 0 Ft: — Diam. — In. | Inspected By: Beddoe
Soil Samples 13/8 In. Diam. 11 No. | Classification By: Beddoe
Soil Samples — In. Diam. — No. | Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / CORE RECOVERY	BLOWS PER FT.	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0'						
	S-1	1 3/8"	REC 50%	3 2 3 5	Sample using 13/8" ID by 2' long split spoon sampler.	Medium brown SILT, little f. SAND, trace ORGANICS (wood chips, roots) (moist, nonplastic) medium stiff ML (Material had been previously disturbed by bulldozer)
2.0'					3¼" ID Hollow stem Auger to 5.0' Augering easy throughout boring.	
5.0'						Medium grey-brown ML as above, with trace of GRAVEL (Material not previously disturbed by bulldozer)
	S-2	1 3/8"	50%	4 4 4 8	Sample as above	
7.0'					Auger to 10.0'	
10.0'						

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5, (FD87-20)
Boring 12.0' deeper than requested to compensate for change in boring location which elevated the boring 12.0', Please see Note, Page 4.

Note! All soil sampling performed in accordance with ASTM D1586 except as noted.

Site	Boring No.	Page
Roughans Point	FD87-14	3 of 5

Depth (10.0' – 27.0')	Core/Sample No.	Size	Rec.	Blows per 6"	6" Sampling and Coring Operations	Classification of Materials
10.0'–12.0'	S-3	$1\frac{3}{8}$"	100%	2, 2, 2, 2	Sample using 1 3/8" ID by 2' long split spoon sampler,	Medium grey SILT, some CLAY, trace SHELL FRAGMENTS, trace f SAND (wet, mod. plastic) soft MH
12.0'–15.0'					3 1/4" ID Hollow Stem Auger to 15.0'	
15.0'–17.0'	S-4	$1\frac{3}{8}$"	100%	3, 2, 2, 3	Sample as above	MH as above
17.0'–20.0'					Auger to 20.0'	MH as above
20.0'–21.0'	S-5A	$1\frac{3}{8}$"	65%	5, 5	Sample as above	Medium grey f SAND, trace SILT
21.0'–22.0'	S-5B	$1\frac{3}{8}$"	65%	8, 5		(saturated, nonplastic) loose SP
22.0'–25.0'					Auger to 25.0'	change to softer consistancy during drilling
25.0'–26.5'	S-6A	$1\frac{3}{8}$"	100%	2, 3, 5	Sample as above	Soils Similar to S-3 MH
26.5'–26.8'	S-6B	1 3/8"	100%	7		Soils Similar to S-5B SP
26.8'–27.0'	S-6C	1 3/8"	100%			Medium grey cmf SAND and f GRAVEL, trace SILT (saturated, nonplastic) loose SW

BA (Test)

Boring No FD87-14

Site: Roughans Point	Boring No. FD87-14	Page 4 of 5

DEPTH		CORE/SAMPLE			BLOWS PER FT	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
27.0'	1'-2'	NO.	SIZE	REC % / CORE REC %			
				REC		3 1/4" ID Hollow stem Auger to 30.0'	
30.0'							
		S-7	1 3/8"	90%	15 10 7 6	Sample using 1 3/8" ID by 2' long split spoon sampler.	Medium grey and SAND, trace & GRAVEL, trace SILT (saturated, nonplastic) medium dense SW
32.0'							
						Auger to 35.0'	
35.0'							
		S-8	1 3/8"	100%	16 10 7 16	Sample as above	SW as above
37.0'							
						Boring Terminated at 37.0' 1/14/87	

Note: Boring location had been regraded by bulldozer which removed bushes and trees and cleared a road to the boring. Final grade was approximately one foot higher than initial grade at the boring location. No soil was removed, only bushes and trees with whatever topsoil would have been disturbed in that process.

Site: Vaughan's Point
Boring No: FD87-14

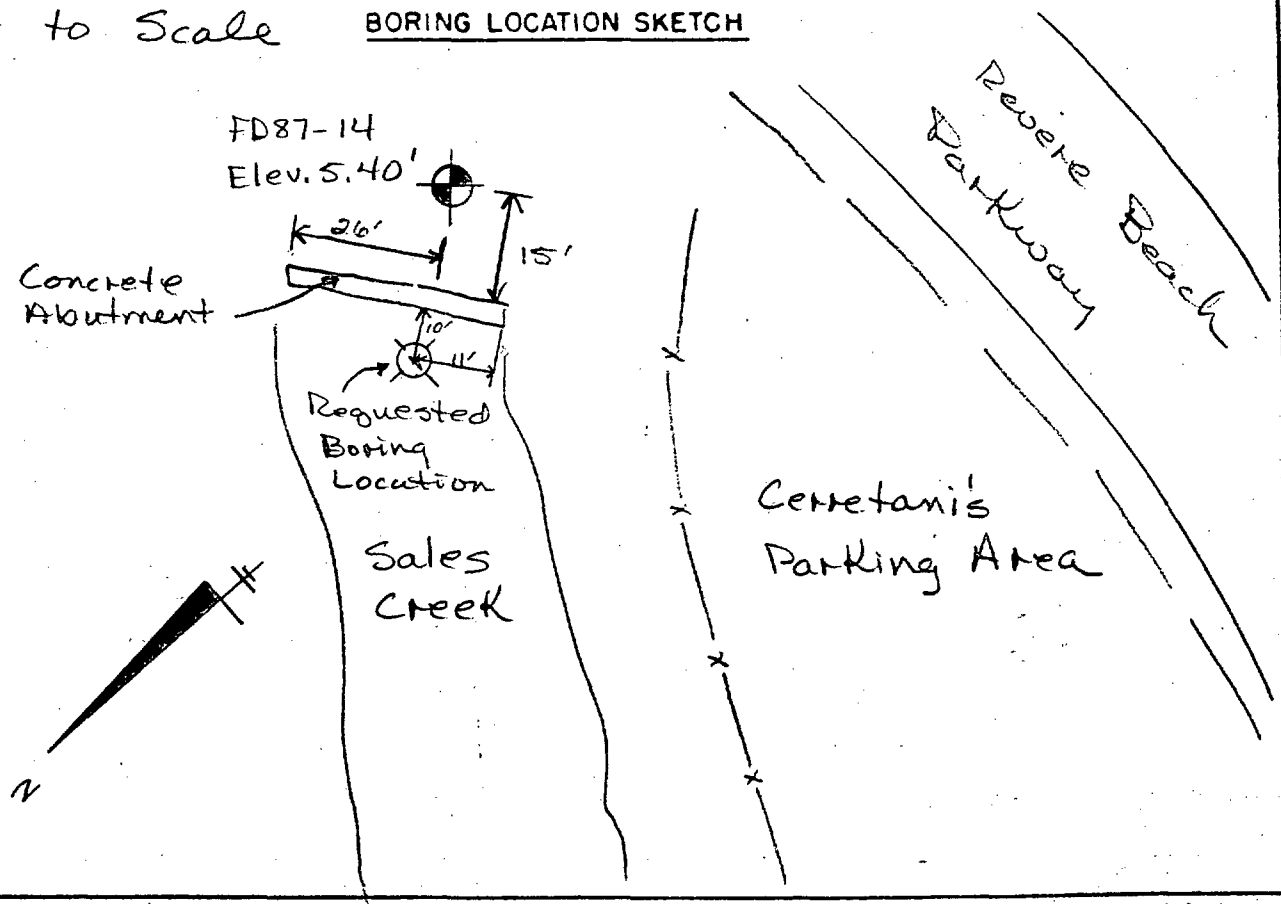
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/14/87	12:45	35.0	37.0	8.0	27.0	in augers after boring terminated

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O.#0018

Site Roughan's Point, Revere, MA — Page 1 of 8 Pages

Hole No. ED87-15 Diam. (Casing) 4" — Boring Started 1/12/87

Co-ordinates: X See X sketch — Boring Completed 2/8/87

Drilled by Cambridge & Burnham — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole 7.70 M.S.L. — Casing Left in Place 0 Feet
Total Overburden Drilled 54.0 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -46.3 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 54.0 Feet
Core Recovered 0 %
Core Recovered 0 Ft.; — Diam. — in.
Soil Samples 1 3/8 in. Diam. 14 No.
Soil Samples 3 in. Diam. 1 No. — Water Table Depth 8.0'

Depth From	Depth To	Method of Drilling * and Type of Bit Used
0.0	5.0	track backhoe
5.0	10.0	3 1/4" ID Hollow stem Auger
10.0	30.0	4" spun-in casing cleaned out by
		3 7/8" OD roller bit
30.0	52.0	3 7/8" OD roller bit in open hole
52.0	54.0	1 3/8" ID split spoon sampler
		*includes samples taken every 5'
		or less using either 1 3/8" ID split spoon sampler or 3" ID undisturbed sampler

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Prepared by TABeddoe — Field Data — Lab Data

Submitted by Atlantic Testing Labs, Ltd

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
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FIELD LOG OF TEST BORING

Site Dougham's Point, Revere MA Page 2 of 8 Pages

Boring No. ED87-15 Desig. O Diam. (Casing) 4"

Co-ordinates: X see sketch Y

Elevation Top of Boring 7.70 M.S.L. Hammer Wt. 140# Boring Started 1/12/87

Total Overburden Drilled 54.0 Feet Hammer Drop 30" Boring Completed 2/8/87

Elevation Top of Rock — M.S.L. Casing Left 0'

Total Rock Drilled 0 Feet Subsurface Water Data — Page 8

Elevation Bottom of Boring -46.3 M.S.L. Obs. Well NO

Total Depth of Boring 54.0 Feet Drilled By Cambridge & Burnham

Core Recovered 0 % No. Boxes 0 Mfg. Des. Drill CME 45

Core Recovered 0 Ft : — Diam. — In. Inspected By: Beddoe

Soil Samples 1 3/8 In. Diam. 14 No. Classification By: Beddoe

Soil Samples 3 In. Diam. 1 No. Classification By: —

DEPTH		CORE/SAMPLE			BLOWS PER FT. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0	1" = 2'	NO.	SIZE	DEPTH RANGE			
						Five feet of boulders removed by subcontracted track backhoe	Boulders (rip rap) 1 ft³ to 10 ft³ in size; interstitial material - silt.
5.0						Explorations end 1/12/87	
		S-1	1 3/8"	15½	3 10 6 20	Explorations begin 1/30/87 Sample using 1 3/8" ID by 2' long split spoon sampler	Medium brown cmf SAND, some cf GRAVEL, trace SHELL FRAGMENTS, trace SILT (wet, non-plastic) medium dense SW
7.0						3 1/4" ID Hollow Stem auger to 10.0' Augering easy.	
10.0'							

GENERAL REMARKS:
Elevations as determined in the field by ATL using benchmark near FD-5 (FD87-20)

All soil sampling performed in accordance with ASTM D1586 except as noted. (UD-1 and UD-2, ASTM D1587).

Site		Boring No.	Page
Boughams Point		FD87-15	3 of 8

Depth (10.0)	1" = 2'	Core/Sample No.	Size	Depth Range / % Rec	Blows per 6" / Core Recovery	Sampling and Coring Operations	Classification of Materials
10.0–12.0		S-2	1 3/8"	REC 25%	4, 4, 4, 2	Sample using 1 3/8" ID by 2' long split spoon sampler. Remove 3 1/4" ID hollow stem augers. Explorations end 1/20/87	Medium grey with brown flecks SILT, little ORGANICS (unidentifiable), trace CLAY (wet, very slightly plastic) medium stiff ML Note sulphur odor (natural)
12.0–15.0						Explorations begin 1/29/87. Spin 4" ID casing to 15'. Material easy to penetrate to 30.0'. Wash out using 3 7/8" OD roller bit.	
15.0–17.0		S-3	1 3/8"	45%	5, 2, 4, 4	Sample as above. Explorations end 1/29/87	Med. grey CLAY, some SILT, little mf SAND, trace f GRAVEL (saturated, plastic) medium stiff CL (Note odor of petroleum contaminant from offsite)
17.0–19.2						Explorations begin 2/3/87. Spin casing to 19.5'. Wash out	Med. grey SILT and CLAY, trace cmf SAND (sat, plastic) stiff MF
19.2–19.7		S-4A	1 3/8"	80%	8	Attempt an undisturbed sample (see page 6)	
19.7–20.7		S-4B	1 3/8"	80%	7, 11	Sample by split spoon as above at same elevation.	Med. grey/brown SILT, little CLAY (moist, slightly plastic) very stiff ML
20.7–21.2		S-4C	1 3/8"	80%	11		
21.2–25.0						Spin casing to 24.0'. Note change in material consistency at 21.5'. Explorations end 2/3/87 AM. Explorations begin 2/3/87 PM. Advance 3 7/8" roller bit to 25'.	Soils similar to S-4B with trace f. SAND. ML
25.0–27.0		S-5	1 3/8"	5%	10, 7, 9, 8	Sample using split spoon as above. First sample yielded no recovery. Second attempt with new basket yielded 5% recovery.	Light brown SILT and CLAY little cmf SAND (sat., plastic) stiff ML

Site: Roughans Point	Boring No. FD87-15	Page 4 of 8

DEPTH 27.0'	1" = 8'	CORE/SAMPLE NO.	SIZE	DEPTH/REC	BLOWS PER 6" / CORE REC'Y	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
				REC		Spin 4" casing to 30'. Clean out using 3 7/8" O.D. roller bit	See material description page 3
30.0'		S-6	1 3/8"	15%	25 47 42 27	Sample using 1 3/8" ID by 2' long split spoon sample. Explorations end 2/3/87 PM	Light grey-brown SILT, little CLAY, trace f SAND (saturated, slightly plastic) hard ML with 1/8" layer SILT - Note odor of petroleum contamination from off-site and soft blebs of clayey silt.
32.0'						Explorations begin 2/4/87 AM Advance 3 7/8" roller bit to 35'. Material difficult to penetrate to 40.0'	
35.0'		S-7	1 3/8"	25%	50 62 59 50	Sample as above	Light grey CLAY, some SILT, little cmf SAND, trace f. GRAVEL (sat., plastic) hard CL Note odor of petroleum product (offsite contaminant)
37.0'						Advance roller bit to 40'.	
40.0		S-8A	1 3/8"	100%	6 7 7	Sample as above	Light grey CLAY, some SILT, trace f. SAND, (sat., plastic) stiff CL Note no odor.
41.5		S-8B	1 3/8"	100%	8	Explorations end 2/4/87 AM	Soils similar to S-6 with 2" layer of soils similar to S-8A. Note petroleum odor. (offsite contaminant) ML
42.0						Explorations begin 2/4/87 PM Advance roller bit to 45'. Material easy to penetrate to 46.5'.	
44.0'							

Site: Roughan's Point	Boring No. FD87-15	Page 5 of 8

DEPTH 44.0'	1" = 2'	CORE/SAMPLE NO.	SIZE	REC	BLOWS PER 6" / CORE REC	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
44.8'						Advance 3 7/8" OD roller bit to 44.8' in open hole.	
46.5'		UD-2	3"	100%	N/A	Take undisturbed sample (see page 7). Sample description from disturbed material at top of tube.	Med grey-brown CLAY, some SILT, little cmf SAND (sat., plastic) CL
48.5		S-9	1 3/8"	25%	35 32 21 14	Sample using 1 3/8" ID by 2' long split spoon sampler to determine character of soils which caused UD-2 tube refusal. Explorations End 2/4/87 PM	Med. grey mf SAND, some SILT, little CLAY, trace f. GRAVEL (sat., slightly plastic) dense SM-SC
49.0						Explorations begin 2/5/87 Roller bit to 49.0'.	Note petroleum odor - offsite contaminant
51.0		S-10	1 3/8"	25%	17 17 17 17	Material difficult to penetrate to end of boring. Sample using split spoon.	Med grey mf SAND and cf GRAVEL, trace SILT (sat., nonplastic) dense SP
52.0						Advance roller bit to 52'. Note caving at 50'. Explorations end 2/5/87	Note odor of petroleum product (offsite contaminant)
54.0		S-11	1 3/8"	40%	65 45 45 35	Explorations begin 2/8/87 Clean hole using roller bit, to 52'. Note caving to 51' which required extensive cleaning. Sample using split spoon.	Med brown-grey soils similar to S-10. SP - TILL Note faint petroleum odor (offsite contaminant).
						Boring terminated, as directed by the Corps, at 54.0', 2/8/87	

FIELD LOG OF UNDISTURBED SAMPLING IN DRILL HOLES

SITE Pougham's Point, Revere MA HOLE NO. FD87-15 DATE 2/3/87

SAMPLE NO. UD-1 INSPECTOR Bedloe DRILLER Cambridge

A	Total Length of Casing	15.3	
B	Casing Length above Ground	0.8	
C	Depth of Bottom of Casing (Below Ground) (A-B)	14.5	
D	Length of Sampler and Drill Rods	22.9	
E	Drill Rods Length above Ground	8.7	
F	Depth of Bottom of Clean-Out Auger (below ground)(D-F)	14.2	
G	Distance of Bottom of Auger above or below Casing(F-C)	-0.3	
		Drill Rods, (1)	Piston Rods, (2)
H	Total Length, Sampler and Rods	22.9	
I	Length of Rods above Ground	8.7	
J	Depth of Bottom of Sampler (below ground) (H-I) (1) & (2), (Depth of Top of Sample)	14.2	
K	Penetration of Sampler, (K-F) (1)	1.3	
L	Penetration or Swell of Piston (K-F)(2)	N/A	
	Data after Jacking		
M	Length of Sampler and Piston Rods above Ground	7.4	N/A
N	Length of Drive (I-M)(1)	1.3	
O	Piston Displacement (I-M) (2)	N/A	
P	Length of Sample Recovered	0.0	
Q	Length of Sample Lost	1.3	
R	Amount of Sample Recovered, %, $\frac{P}{N} \times 100$	0%	
S	Type and Size of Sampler 3"OD tube, total length 2.9'		
T	Method and Time of Penetration steady downpressure using Hq 9:30 AM		
U	Type of Materials Sampled clayey silt - see S-4, page 3		

Other Notes and Remarks: Note that top of boring is 5.0' above ground surface.
length of sampler 2.9'
Sampler was refused after 1.3' penetration. Sampler allowed to sit 10 minutes, given one full twist.
No recovery - bottom of sampler warped badly by refusal
split spoon sample taken at same elevation (see S-4)

NED FORM DEC 63 74 REPLACES EDITION OF MAR 53 WHICH MAY BE USED UNTIL EXHAUSTED

FIELD LOG OF UNDISTURBED SAMPLING IN DRILL HOLES

SITE Roughans Point, Revere MA HOLE NO. FD87-15 DATE 2/4/87

SAMPLE NO. UD-2 INSPECTOR Beddoe DRILLER Cambridge

A	Total Length of Casing	20.3	
B	Casing Length above Ground	1.3	
C	Depth of Bottom of Casing (Below Ground) (A-B)	19.0	
D	Length of Sampler and Drill Rods	42.9	
E	Drill Rods Length above Ground	3.1	
F	Depth of Bottom of Clean-Out Auger (below ground)(D-F)	39.8	
G	Distance of Bottom of Auger above or below Casing(F-C)	20.8	
		Drill Rods, (1)	Piston Rods, (2)
H	Total Length, Sampler and Rods	42.9	
I	Length of Rods above Ground	3.1	
J	Depth of Bottom of Sampler (below ground) (H-I) (1) & (2), (Depth of Top of Sample)	39.8	
K	Penetration of Sampler, (K-F) (1)	1.7	
L	Penetration or Swell of Piston (K-F)(2)	N/A	
	Data after Jacking		
M	Length of Sampler and Piston Rods above Ground	1.4	N/A
N	Length of Drive (I-M)(1)	1.7	
O	Piston Displacement (I-M) (2)	N/A	
P	Length of Sample Recovered	1.7	
Q	Length of Sample Lost	0.0	
R	Amount of Sample Recovered, %, $\frac{P}{N} \times 100$	100%	
S	Type and Size of Sampler 3" OD tube, tube length 2.5', total 2.9'		
T	Method and Time of Penetration steady down pressure using Hg / 9:20 PM		
U	Type of Materials Sampled silty clay - see desription, page 5		

Other Notes and Remarks:
Note that top of boring is 5.0' above ground surface
Sampler was refused after 1.7' penetration. Sampler allowed to sit 10 minutes, given one full twist.
Recovered sample came to base of sampler. Base was capped, taped and sealed in beeswax. Top of sample capped in tube with beeswax. Remainder of tube filled with beach sand. Tube was capped, taped and sealed with beeswax.

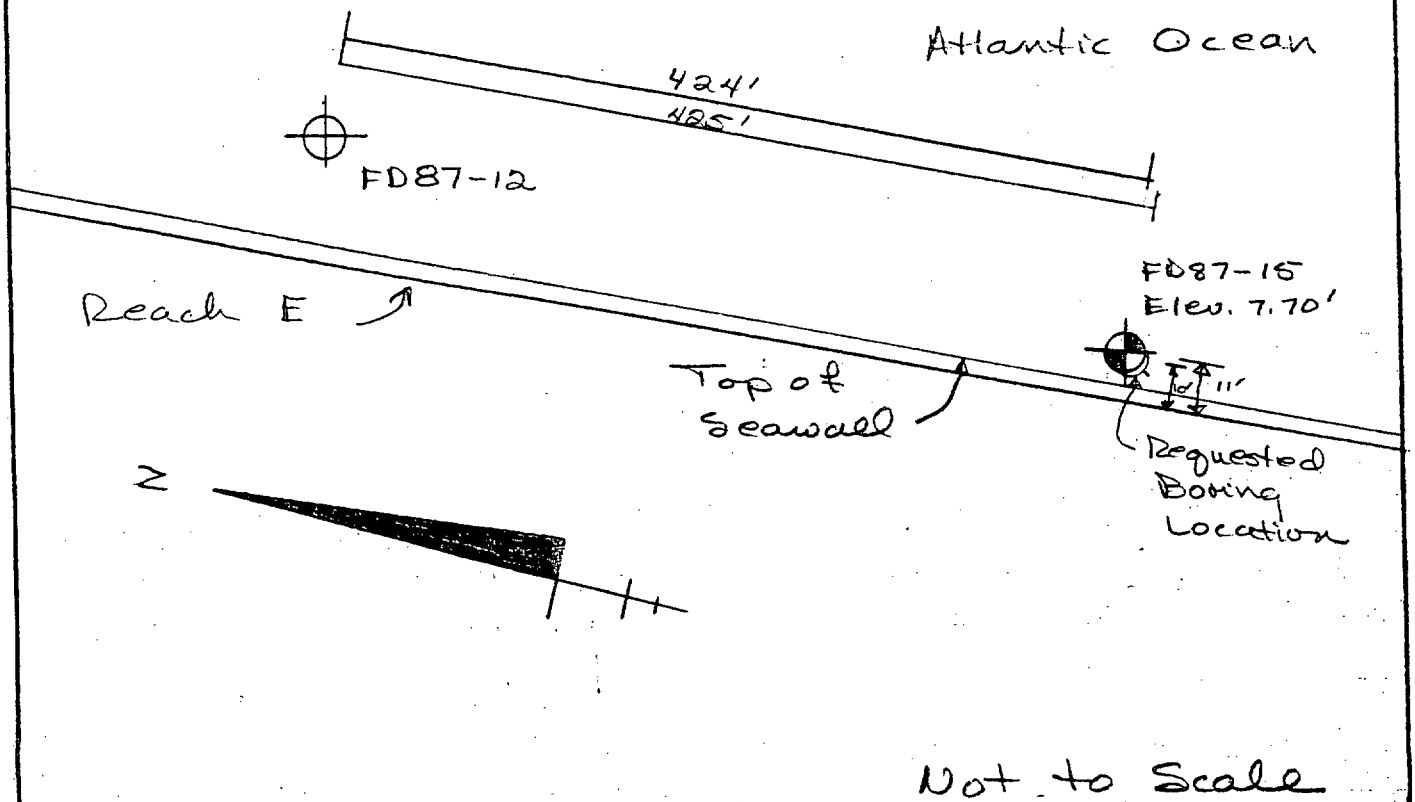
Site: Vaughan's Point
Boring No: FD87-15

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
2/3/87	9:00AM	15.0'	17.0'	5.0'	2.7'	water at surface of ground (5' of rip rap removed)
2/4/87	8:30PM	24.0'	42.0'	8.0'	-0.3	at start of drilling
2/5/87	9:00AM	24.0'	48.5'	8.2'	-0.5	at start of drilling
2/6/87	12:00N	24.0'	54.0'	8.0'	-0.3	at start of drilling

Note: Depths are in feet below original ground

BORING LOCATION SKETCH



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O.#0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. FD87-16 Diam. (Casing) 3¼" ID Hollow Stem Auger — Boring Started 1/21/87

Co-ordinates: X see X sketch — Boring Completed 1/21/87

Drilled by Cambridge & Burnham — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berm

Elevation Top of Hole -3.30 M.S.L.
Total Overburden Drilled 15.0 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -18.3 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 15.0 Feet
Core Recovered 0 %
Core Recovered 0 Ft.; — Diam. — In.
Soil Samples 13/8 In. Diam. 5 No.
Soil Samples — In. Diam. — No.

Casing Left in Place 0 Feet
Water Table Depth surface

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	13.0	3¼" ID Hollow Stem Auger with
		1 3/8" ID Split Spoon Sampling at
		5' intervals
13.0	15.0	1 3/8" ID Split Spoon Sampler

INDEX

Prepared by T A Boddor — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughans Point, Revere MA Page 3 of 4 Pages

Boring No. FD87-16 Desig. N Diam. (Casing) 3 1/4" Hollow stem Auger

Co-ordinates: X see Sketch X

Elevation Top of Boring -9.30 M.S.L. | Hammer Wt. 140# | Boring Started 1/21/87

Total Overburden Drilled 15.0 Feet | Hammer Drop 30" | Boring Completed 1/21/87

Elevation Top of Rock — M.S.L. | Casing Left 0' |

Total Rock Drilled 0 Feet | Subsurface Water Data _____ | Page 4

Elevation Bottom of Boring -18.3 M.S.L. | Obs. Well no

Total Depth of Boring 15.0 Feet | Drilled By Cambridge + Burnham

Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45

Core Recovered 0 Ft: — Diam. — In. | Inspected By: Beddoe

Soil Samples 1 3/8 In. Diam. 5 No. | Classification By: Beddoe

Soil Samples — In. Diam. — No. | Classification By: —

DEPTH 0.0' 1"=2'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	% REC	BLOWS PER FT. CORE RECVY	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
2.0'	S-1	1 3/8"		10%	30 20 17 5	Sample using 1 3/8" ID by 2' long split spoon sampler. Poor recovery due to coarse gravels + cobbles @ surface. 3 1/4" ID Hollow stem Auger to 5.0'. Augering difficult to 1.5', easy for remainder of boring.	Med. brown f GRAVEL, some SILT, some ORGANICS (wood chips), trace mf SAND (saturated, non-plastic) med. dense GP-GM (Note numerous surficial cobbles and coarse gravel - recovered sample not considered typical of surficial soils.)
5.0'							
7.0'	S-2	1 3/8"		20%	5 3 2 6	Sample as above	Med. grey cf GRAVEL and mf SAND, trace SILT (saturated, nonplastic) loose GW with 3" layer of Dark red-brown SILT, trace f SAND (wet, nonplastic) med. stiff PEAT-OL (Note natural sulphur odor.)
10.0'						Auger to 10.0'	

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5. (FD87-20)

All soil sampling performed in accordance with ASTM D1586 except as noted.

Site: Roughans Point	Boring No. FD87-16	Page 3 of 4

DEPTH 10.0'	1"=2'	CORE/SAMPLE NO.	SIZE	REC	BLOWS PER 6"	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
		S-3	$1\frac{3}{8}"$	5%	10, 10, 14, 13	Sample using 13/8" ID by 2' long split spoon sampler	Dark red-brown SILT, trace of GRAVEL, trace of SAND (sat., v. slighty plastic) very stiff - PEAT - OL
12.0'						3 1/4" Hollow Stem Auger to 13.0'	(Note natural sulphur odor.)
13.0'		S-4A	$1\frac{3}{8}"$	100%	5, 6	Sample as above	OL as above
14.0'		S-4B	$1\frac{3}{8}"$	100%	6, 6		Light green-grey/rust SILT, some CLAY, trace of SAND (saturated, mod. plastic) stiff MH
15.0'						Boring Terminated at 15.0' 1/21/87	

Site: Roughan's Point
Boring No: FD87-16

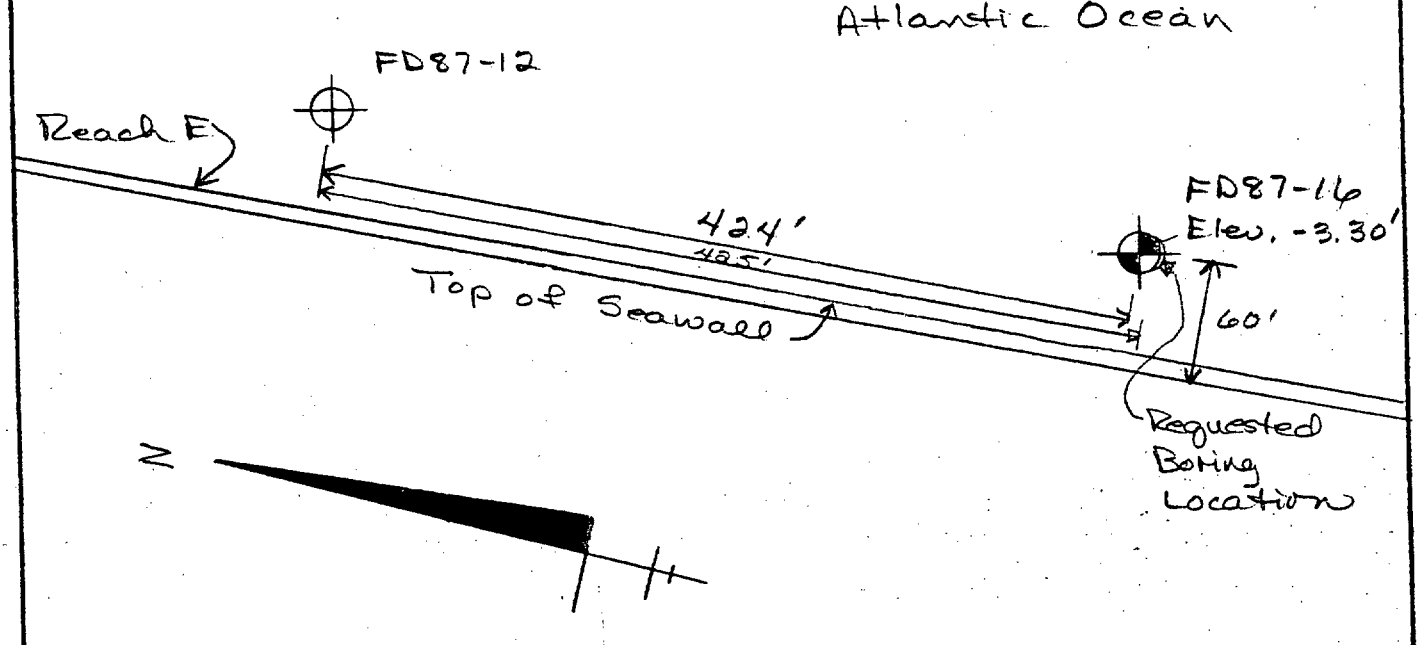
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/21/87	12:20	13.0	15.0	surface	-3.3	in augers after boring termination

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



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NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O.#0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. ED87-17 Diam. (Casing) 3¼" ID Hollow Stem Auger — Boring Started 1/22/87

Co-ordinates: * see * sketch — Boring Completed 1/22/87

Drilled by Cambridge & Burnham — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole 2.00 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 20.00 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -18.00 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 20.00 Feet

Core Recovered 0 %

Core Recovered 0 Ft.; — Diam. — In.

Soil Samples 1 3/8 In. Diam. 10 No.

Soil Samples — In. Diam. — No. — Water Table Depth dry

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	18.0	3¼" ID Hollow Stem Auger with 1 3/8" ID
		Split Spoon Sampling at 5' intervals
18.0	20.0	1 3/8" Split Spoon Sampler

INDEX

Prepared by T A Beddoe — Field Data — Lab. Data

Submitted by Atlantic Testing Laboratories, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Rumney's Point Revere MA Page 3 of 4 Pages

Boring No. FD87-17 Desig. R Diam. (Casing) 3/4" ID Hollow Stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring 2.00 M.S.L. Hammer Wt. 140# Boring Started 1/22/87

Total Overburden Drilled 20.0 Feet Hammer Drop 30" Boring Completed 1/22/87

Elevation Top of Rock — M.S.L. Casing Left 0'

Total Rock Drilled 0 Feet Subsurface Water Data Page 4

Elevation Bottom of Boring -18.0 M.S.L. Obs. Well no

Total Depth of Boring 20.0 Feet Drilled By Cambridge & Burnham

Core Recovered 0 % No. Boxes 0 Mfg. Des. Drill CME 45

Core Recovered 0 Ft : — Diam. — In. Inspected By: Beddoe

Soil Samples 1 3/8 In. Diam. 10 No. Classification By: Beddoe

Soil Samples — In. Diam. — No. Classification By: —

DEPTH 0'	DEPTH 1" = 2'	CORE/SAMPLE NO.	CORE/SAMPLE SIZE	CORE/SAMPLE DEPTH RANGE / REC	BLOWS PER FT. / CORE RECVY	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0'		S-1	1 3/8"	REC 40%	3 11 17 14	Sample using 1 3/8" ID by 2' long split spoon sampler.	Medium grey-brown cmf SAND, little cf GRAVEL, trace SILT (wet, nonplastic) mod. medium dense SW
2.0'						8 1/4" ID Hollow Stem Auger to 5.0' Note a few boulders from 3.0-5.0'	
5.0'		S-2A	1 3/8"	100%	3 3	Sample as above	SW as above — saturated, loose
6.0'		S-2B	1 3/8"	100%	3 3		Dark brown SILT and ORGANICS (roots, wood chips), trace f. SAND, (wet, nonplastic) medium stiff
7.0'						Auger to 10'. Augering easy for remainder of boring.	OL PEAT Note natural sulphur odor.

GENERAL REMARKS:

Elevations as surveyed in the field by ATL using bench-mark near FD-5. (FD87-20)

All soil sampling performed in accordance with ASTM D1586 except as noted.

Site	Boring No.	Page
Roughan's Point	FD87-17	3 of 4

Depth (1" = 2')	Core/Sample No	Size	Rec	Blows per 6"	6" Sampling and Coring Operations	Classification of Materials
10.0 – 12.0	S-3	1 3/8"	50%	2, 2, 2, 4	Sample using 1 3/8" ID by 2' long split spoon sampler	Soils Similar to S-2B OL PEAT
12.0 – 15.0					3 1/4" ID Hollow Stem Auger to 15.0'	Soils Similar to S-2B saturated - OL PEAT
15.0 – 15.7	S-4A	1 3/8"	85%	4	Sample as above	Light grey/rust SILT, little CLAY, trace f SAND, trace f GRAVEL (wet, slightly plastic) stiff ML
15.7 – 16.3	S-4B			6, 7		
16.3 – 17.0	S-4C			11		Medium grey mf SAND and SILT, trace f GRAVEL, trace CLAY (sat, very slightly plastic) medium dense - SM
17.0 – 18.0					Auger to 18.0'	
18.0 – 19.3	S-5A	1 3/8"	100%	15, 19	Sample as above	Dark brown SILT, some ORGANICS (roots, wood chips) trace f. SAND, trace f. GRAVEL, trace CLAY (sat, v. sl. plastic) ML (Note natural sulphur odor)
19.3 – 19.7	S-5B			17		Medium blue-grey CLAY and SILT, trace f. SAND (saturated, plastic) hard CL
19.7 – 20.0	S-5C			23		Light yellow/green mottled SILT and mf SAND, little cf GRAVEL, trace CLAY (wet, very slightly plastic) hard ML
					Boring Terminated at 20.0' 1/22/87	

Site: Roughan's Point
Boring No: FD87-17

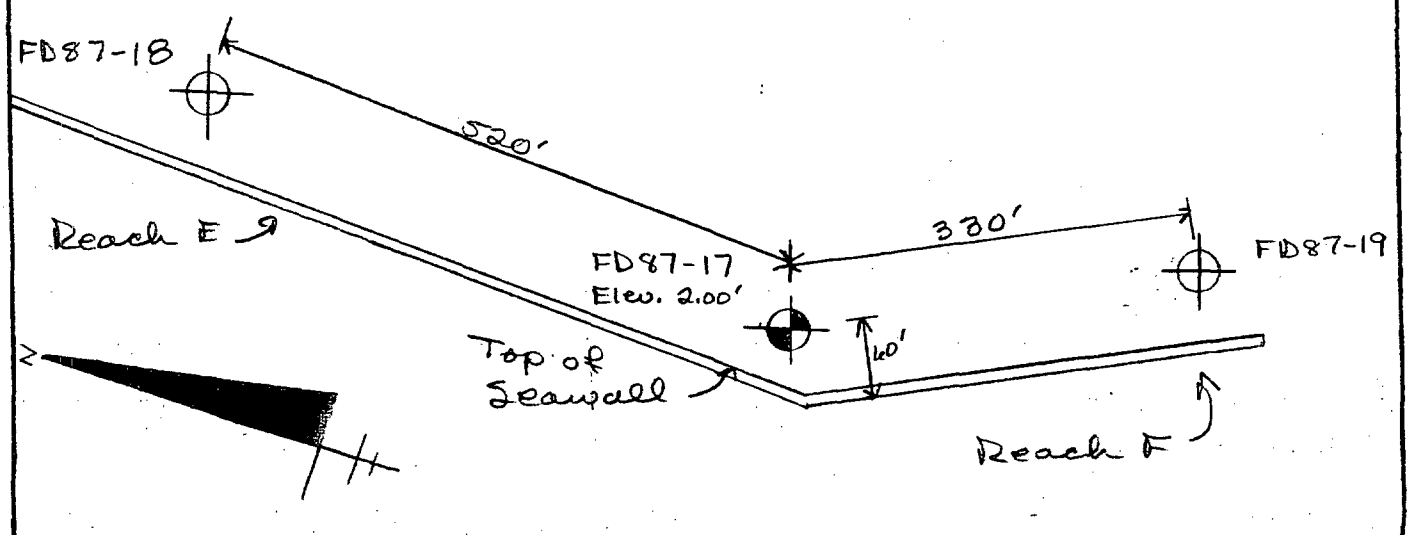
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/22/87	11:15	18.0	20.0	dry	—	in augers after boring terminated

Note: Depths are in feet below original ground

Not to Scale. BORING LOCATION SKETCH

Note: As-built boring location is the requested location.



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Doughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. FD87-18 Diam. (Casing) 3¼"ID Hollow Stem Auger — Boring Started 1/28/87

Co-ordinates: X see X sketch — Boring Completed 1/28/87

Drilled by Cambridge & Burnham — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole -2.20 M.S.L.
Total Overburden Drilled 20.0 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -22.20 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 20.0 Feet
Core Recovered 0 %
Core Recovered 0 Ft.; — Diam. — in.
Soil Samples 1 3/8 in. Diam. 10 No.
Soil Samples — in. Diam. — No.

Casing Left in Place 0 Feet
Water Table Depth 13.0'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	18.0	3¼"ID Hollow Stem Auger with
		1 3/8"ID Split Spoon Sampling at
		5' intervals
18.0	20.0	1 3/8"ID Split Spoon Sampler

INDEX

Prepared by TABeddoe (Field Data) (Lab Data)

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughan's Point, Revere MA Page 2 of 4 Pages

Boring No. FD87-18 Desig. P Diam. (Casing) 5¼" Hollow Stem Auger

Co-ordinates: X see sketch X

Elevation Top of Boring -2.20 M.S.L. | Hammer Wt. 140# | Boring Started 1/28/87
Total Overburden Drilled 20.0 Feet | Hammer Drop 30" | Boring Completed 1/28/87
Elevation Top of Rock — M.S.L. | Casing Left 0' | Subsurface Water Data — | Page 4
Total Rock Drilled 0 Feet
Elevation Bottom of Boring -22.20 M.S.L. | Obs. Well NO
Total Depth of Boring 20.0 Feet | Drilled By Cambridge & Burnham
Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45
Core Recovered 0 Ft: — Diam. — In. | Inspected By: Beddoe
Soil Samples 1 3/8 In. Diam. 10 No. | Classification By: Beddoe
Soil Samples — In. Diam. — No. | Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / CORE RECOVERY	BLOWS PER FT.	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0'			REC	10	Sample using 1 3/8" ID by 2' long split spoon sampler. Poor recovery due to coarse gravels and cobbles at the surface	Medium grey cf GRAVEL, some cmf SAND, trace SILT (saturated, nonplastic) very dense GW
1'-2'	S-1	1 3/8"	10%	47		
				27		
2.0'				7		
					3¼" ID Hollow Stem Auger to 5.0'. Augering difficult to 1.5'; easy for the remainder of the boring.	
5.0'						
	S-2	1 3/8"	100%	2	Sample as above	Med. grey SILT and CLAY, trace ORGANICS (unidentifiable cotton fibres) (wet, plastic) soft MH
				1		
				2		
7.0'				3		
					Auger to 10.0'	
10.0'						

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5 (FD87-20)
All soil sampling performed in accordance with ASTM D1586 except as noted.

Site	Boring No.	Page
Roughan's Point	FD87-18	3 of 4

DEPTH 10.0'	1" = 2'	CORE/SAMPLE NO	SIZE	DEPTH / REC	BLOWS PER 6" / CORE REC	6" SAMPLING AND CORING OPERATIONS
10.5'		S-3A	1 3/8"	REC 100%	1	Sample using 1 3/8" I.D. by 2' long split spoon sampler
		S-3B and S-3C	1 3/8"	100%	2, 3, 5	
12.0'						3 1/4" ID Hollow Stem Auger to 15.0'
15.0		S-4A	1 3/8"	100%	2, 1, 3	Sample as above
16.5						
17.0		S-4B	1 3/8"	100%	3	Auger to 18.0'
18.0		S-5A			10, 11	Sample as above
19.0 / 19.1		S-5B	1 3/8"	100%		
		S-5C			17, 17	
20.0						Boring Terminated at 20.0' 1/28/87

CLASSIFICATION OF MATERIALS

- Dark brown SILT, some ORGANICS (roots, stems); trace m-f SAND, trace f. GRAVEL trace CLAY (saturated, very slightly plastic) very soft OL natural PEAT - Note, sulphur odor
- S-3B - Med grey SILT and CLAY, trace f SAND, trace ORGANICS, trace SHELL FRAGMENTS (sat., plastic) med. stiff MH with two 1" layers of S-3C - Med. grey m-f SAND, trace SILT (sat., non-plastic) loose SP
- Soils Similar to S-3B MH
- Dark red-brown SILT and ORGANICS (roots, wood chips) (wet, nonpl) medium stiff PEAT OL
- Medium grey CLAY, some SILT, trace SHELLS, trace f SAND, trace f. GRAVEL, trace ORGANICS (roots) (sat., plastic) very stiff CL
- Soils Similar to S-4B - OL
- Light grey SILT, and f SAND, trace CLAY (in blebs) (moist, nonplastic) hard SANDY ML

Site: Roughan's Point
Boring No: FD87-18

SUBSURFACE WATER OBSERVATIONS

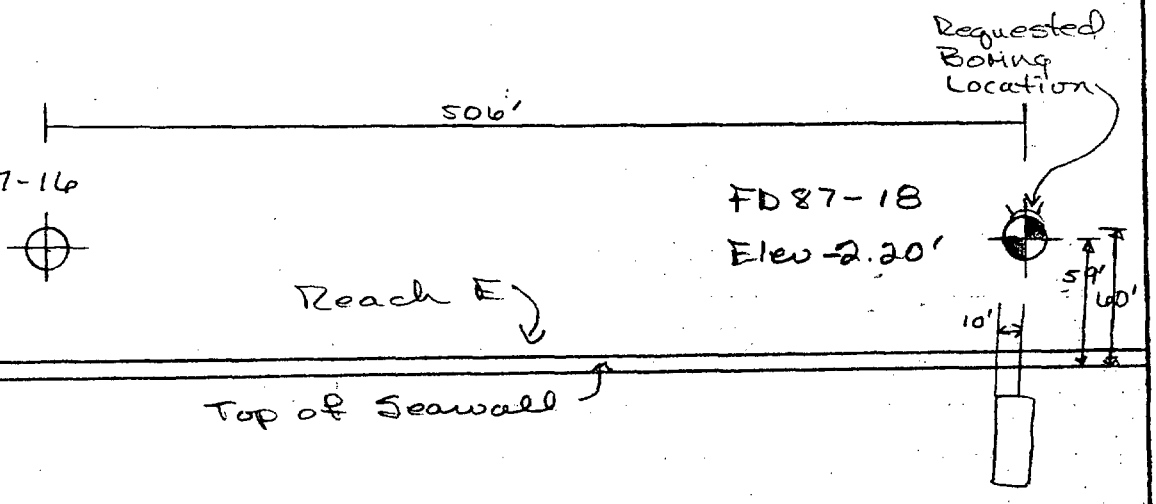
DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/28/87	1:15P	18.0'	20.0'	13.0'	-15.2'	in augers after boring terminated

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH

Atlantic Ocean



Boring No. FD87-18

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O.#0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. ED87-19 Diam. (Casing) 3¼"ID Hollow stem Auger — Boring Started 1/28/87

Co-ordinates: X see Y sketch — Boring Completed 1/28/87

Drilled by Cambridge + Burnham — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole -3.80 M.S.L.
Total Overburden Drilled 11.75 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -15.55 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 11.75 Feet
Core Recovered 0 %
Core Recovered 0 Ft.; — Diam. — In.
Soil Samples 1 3/8 In. Diam. 3 No.
Soil Samples — In. Diam. — No.

Casing Left in Place 0 Feet
Water Table Depth 1.5'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	10.0	3¼" ID Hollow Stem Auger with 1 3/8" ID Split Spoon Sampling every 5'
10.0	11.75	1 3/8" ID Split spoon Sampler

INDEX

Prepared by T A Reddoe
Field Data — Lab. Data

Submitted by Atlantic Testing Labs. Ltd.

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughan's Point, Revere MA Page 2 of 4 Pages

Boring No. E027-19 Desig. T Diam. (Casing) 3/4" Hollow Stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring -3.80 M.S.L. | Hammer Wt. 140# | Boring Started 1/28/87
Total Overburden Drilled 11.75 Feet | Hammer Drop 30" | Boring Completed 1/28/87
Elevation Top of Rock — M.S.L. | Casing Left 0' | Subsurface Water Data — | Page 4
Total Rock Drilled 0 Feet
Elevation Bottom of Boring -15.55 M.S.L. | Obs. Well —
Total Depth of Boring 11.75 Feet | Drilled By Cambridge + Burnham
Core Recovered 0 % No. Boxes 0 | Mfg. Des. Drill CME 45
Core Recovered 0 Ft: — Diam. — In. | Inspected By: Beddoe
Soil Samples 13/8 In. Diam. 3 No. | Classification By: Beddoe
Soil Samples — In. Diam. — No. | Classification By: —

DEPTH 0.0'	1" = 2'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / CORE RECOVERY	BLOWS PER 6"	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
				REC	7	Sample using 1 3/8" ID by 2' long split spoon sampler	Light brown c# GRAVEL and c#m SAND, trace SILT (saturated, non-plastic) very dense GW-GM TILL
		S-1	1 3/8"	85%	25		
					60		
5.0'					95		
						3 1/4" ID Hollow Stem Auger to 5.0'	
						Note materials hard to penetrate. Cobbles and boulders encountered throughout boring.	
					27	Sample as above	Light brown m# SAND, little # GRAVEL, trace SILT (moist, nonplastic) very dense SP TILL
		S-2	1 3/8"	60%	36		
					41		
7.0'					37		
						Auger to 10.0'.	
10.0'							

GENERAL REMARKS:
Elevation as surveyed in the field by ATL using benchmark near FD-5. (FD87-20)
Boring located in a boulder field/mussel colony.
All soil sampling performed in accordance with

ENG FORM 1836, 58 (Test) ASTM D1586.

Site	Boring No.	Page
Roughan's Point	FD87-19	3 of 4

DEPTH		CORE/SAMPLE			BLOWS PER FOOT PER CORE RUN	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	10.0' to 21	NO	SIZE	DEPTH RUN REC			
		S-3	1 3/8"	REC 80%	17 45 63 50/3"	sample using 1 3/8" ID by 2' long split spoon sampler. Note bouncing refusal.	SP as above - TILL
11.75'						Boring Terminated at 11.75' 1/28/87	

Site: Roughans Point
Boring No: FD87-19

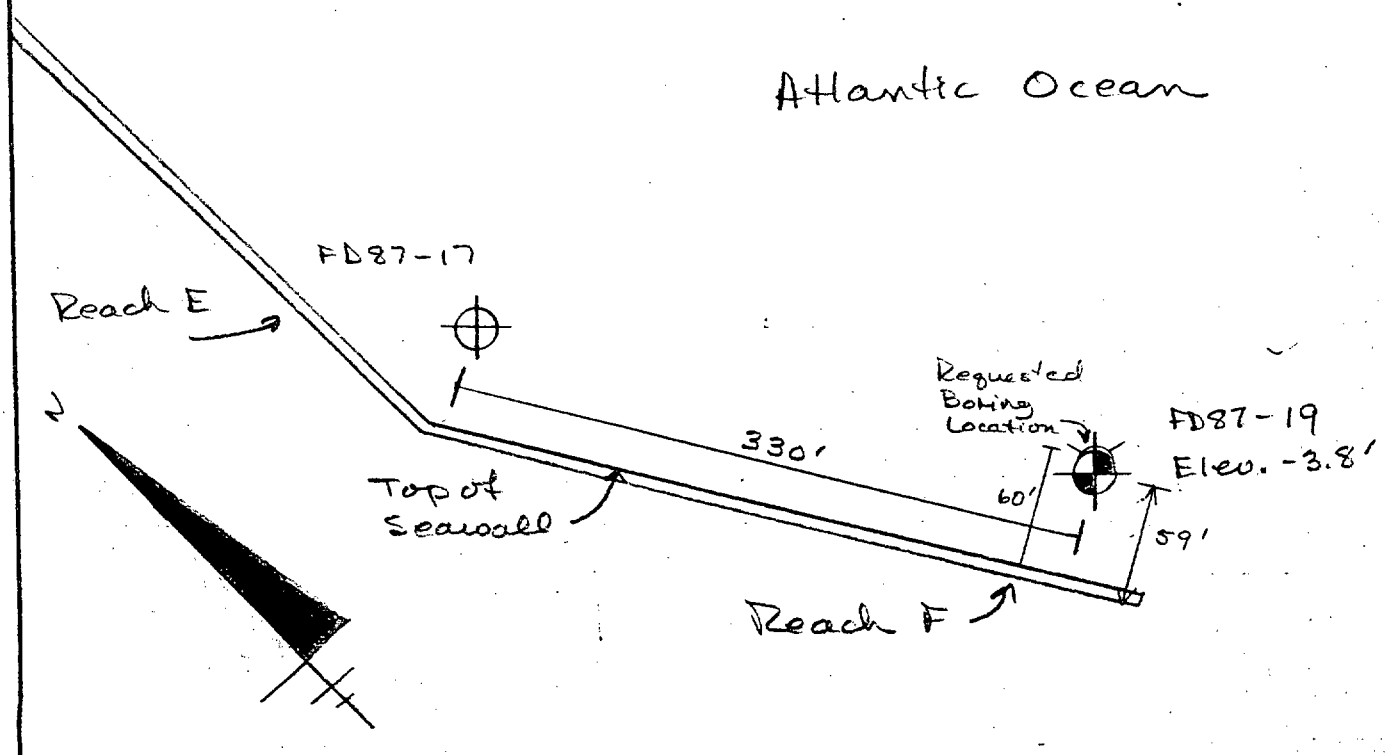
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
1/28/87	5:10	—	12.0'	1.5'	-5.3	in open hole after augers pulled

Note: Depths are in feet below original ground.

Not to Scale

BORING LOCATION SKETCH



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Roughan's Point, Revere MA — Page 1 of 5 Pages

Hole No. ED87-20 Diam. (Casing) 3¼" ID Hollow Stem Auger — Boring Started 2-6-87

Co-ordinates: X see X sketch — Boring Completed 2-6-87

Drilled by Cambridge + Burnham — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole 10.10 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 29.8 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -19.70 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 29.8 Feet

Core Recovered 0 %

Core Recovered 0 Ft.: — Diam. — In.

Soil Samples 13/8 In. Diam. 9 No.

Soil Samples — In. Diam. — No. — Water Table Depth 11.8'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	3.5	Hack backhoe
3.5	28.5	3¼" ID Hollow Stem Auger with
		1 3/8" ID Split Spoon Sampling at
		5' Intervals
28.5	29.8	1 3/8" ID Split Spoon Sampler

INDEX

Prepared by Beddoe (Field Data) — (Lab. Data)

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughan's Point, Revere MA Page 2 of 5 Pages

Boring No. FD87-20 Desig. S Diam. (Casing) 3 1/4" ID Hollow Stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring 10.10 M.S.L.
Total Overburden Drilled 29.80 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring -19.70 M.S.L.
Total Depth of Boring 29.8 Feet
Core Recovered 0 % No. Boxes 0
Core Recovered 0 Ft. — Diam. — In.
Soil Samples 1 3/8 In. Diam. 9 No.
Soil Samples — In. Diam. — No.

Hammer Wt. 140# Boring Started 2-6-87
Hammer Drop 30"
Casing Left 0' Boring Completed 2-6-87
Subsurface Water Data — Page 5
Obs. Well NO
Drilled By Cambridge & Burnham
Mfg. Des. Drill CME 45
Inspected By: Beddoe
Classification By: Beddoe
Classification By: —

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	% RECOV	BLOWS PER 6" CORE	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0' 1"=2'						Three and one half feet of boulder rip rap removed by subcontracted track backhoe	Boulders (rip rap) 1 ft³ to 10 ft³ in size; interstitial material - air
3.5'							
5.5'	S-1	1 3/8"		20%	13 3 5 6	Sample using 1 3/8" ID by 2' long split spoon sampler.	Medium brown cmf SAND, trace f. GRAVEL, trace SHELL FRAGMENTS, trace SILT (wet, nonplastic) loose SW
8.5						3 1/4" ID Hollow Stem Auger to 8.5' Note boulder from 4.0 - 4.5 removed using a shovel. Augering occ'y to 24.5'	
10.0	S-2	1 3/8"		5%	9 5 5	Sample as above. First sample yielded no recovery. Second yeilded 5% recovery.	Medium brown cmf SAND, and f. GRAVEL, trace SILT (wet, nonplastic) medium dense SW Note hydrocarbon contaminant odor. (from offsite).

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using the benchmark near FD-5 (FD87-20)

All soil sampling performed in accordance with ASTM D1586 except as noted.

Site	Boring No.	Page
Roughan's Point	FD87-20	3 of 5

Depth 10.0'	1" = 2'	Core/Sample No	Size	Depth / Recovery	Blows per 6" / Core Recov.	Sampling and Coring Operations	Classification of Materials
10.5'		S-2	$1\frac{3}{8}$"	5%	12	Sample using 1 3/8" ID by 2' long split spoon sampler.	Material as described Page 2.
13.5'						3 1/4" ID Hollow Stem Auger to 13.5' Note coarse gravel, cobbles 10.0'-11.0'	
15.5'		S-3	$1\frac{3}{8}$"	100%	3, 4, 4, 4	Sample as above	Dark brown ORGANIC MATERIAL (roots) and SILT, trace f SAND (wet, nonplastic) medium stiff OL Note sulphur odor (natural)
18.5'						Auger to 18.5' Note change in material consistency at 16.0'. wash out augers with hose, clean out with split spoon sampler.	
20.5'		S-4	$1\frac{3}{8}$"	50%	7, 10, 33, 21	Sample as above.	Med. grey mf SAND, some cf GRAVEL, little CLAY, trace SILT (saturated, slightly plastic) dense SP-SC Note odor of petroleum product (off site pollutant).
23.5'						Auger to 23.5'	
24.5'		S-5A	$1\frac{3}{8}$"	75%	6, 16	Sample as above	Dark brown SILT and mf SAND, some ORGANICS (roots), trace CLAY, trace f GRAVEL (sat, very slightly plastic) hard ML
25.0'		S-5B	$1\frac{3}{8}$"	75%	30		
26.5'		S-5C	$1\frac{3}{8}$"	75%	23		Medium brown f SAND and cf GRAVEL, little CLAY, trace SILT (sat., sl. plastic) very dense SP-SC
27.0'						Auger to 28.5' Note change in material consistency at 26.5'. Augering difficult.	

See sample description Page 4

Site Roughan's Point	Boring No. FD87-20	Page 4 of 5

DEPTH 27.0	1" = 2'	CORE/SAMPLE NO	SIZE	~~DEPTH~~ ~~RANGE~~	BLOWS PER 6" / ~~CORE RECOV~~	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
28.5'				REL		3¼" ID Hollow Stem Auger to 28.5. clean auger out with split spoon sampler.	Med. ~~wet~~-brown f SAND, ~~trace~~ SILT (saturated, non-plastic) dense <u>SP</u>
29.1'		S-6A	1⅜"	100%	54 115	Sample using 1⅜" ID by 2' long split spoon sampler.	Light brown soils as above <u>SP</u>
29.8'		S-6B	1⅜"		115/4"	*Note Bouncing Refusal*	Medium brown cf GRAVEL and mf SAND, trace SILT (moist, nonplastic) very dense <u>GW</u> TILL
						Boring Terminated @ 29.8' 2/16/87	

Site: Doughan's Point
Boring No: FD87-20

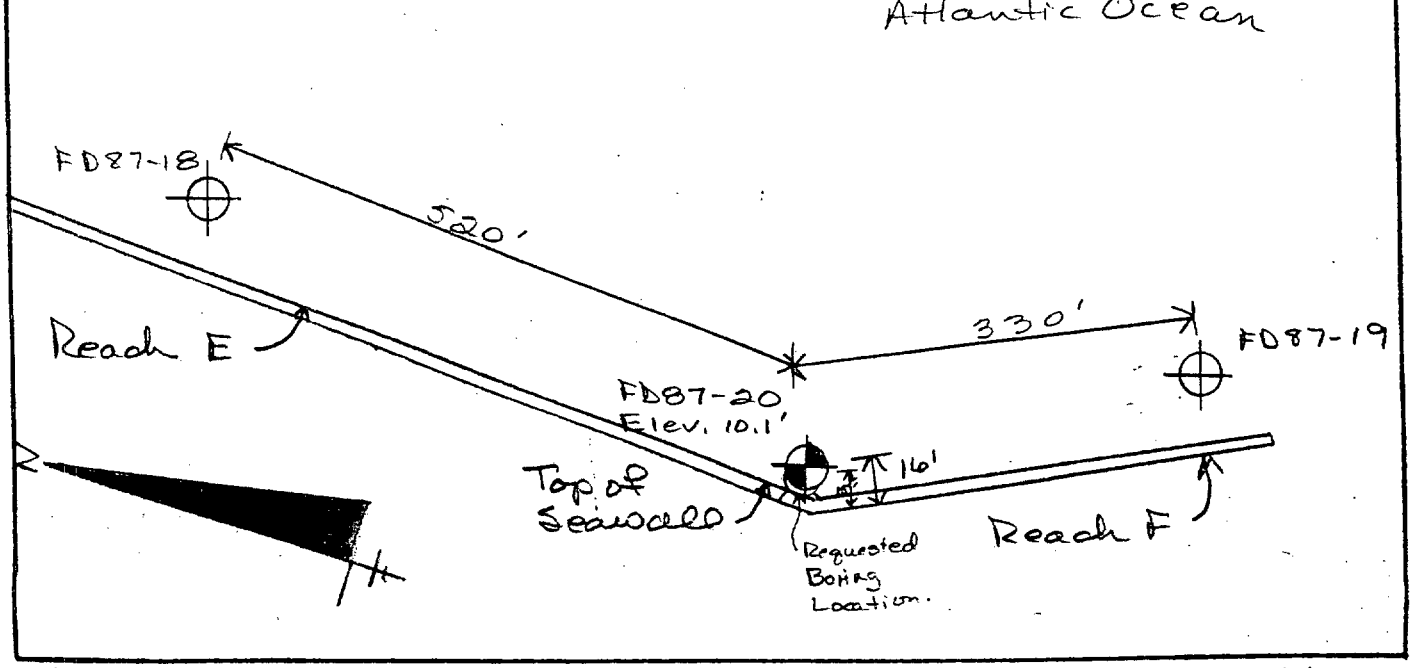
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
2/6/87	12:00	28.5'	29.8'	11.8'	-1.7	after boring was terminated

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O. #0018

Site Roughan's Point, Revere MA — Page 1 of 8 Pages

Hole No. FD87-21 Diam. (Casing) 4" — Boring Started 2/11/87

Co-ordinates: * see & sketch — Boring Completed 2/19/87

Drilled by Cambridge & Burnham — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms

Elevation Top of Hole 5.40 M.S.L. — Casing Left in Place 0 Feet

Total Overburden Drilled 56.5 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole −51.1 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 56.5 Feet

Core Recovered 0 %

Core Recovered 0 Ft.: — Diam. — In.

Soil Samples 1 3/8 In. Diam. 9 No.

Soil Samples 2 In. Diam. 1 No. — Water Table Depth 2.7'

Depth From	Depth To	Method of Drilling * and Type of Bit Used
0	50	ROLLER WASH BIT
50	56.5	DIAMOND BIT CORE BARREL
		*includes samples taken every 5' or
		less using 1 3/8" ID split spoon sampler
		or 3" ID undisturbed sampler.

INDEX

Prepared by T Beddoe, DM Fisher (Field Data) — (Lab. Data)

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY CORPS OF ENGINEERS NEW ENGLAND DIVISION	Site Roughan's Point, Revere MA Page 3 of 8 Pages
	Boring No. FD87-21 Desig. Q Diam. (Casing) 4"
FIELD LOG OF TEST BORING	Co-ordinates: N see sketch E

Elevation Top of Boring	5.40 M.S.L.	Hammer Wt.	140#
Total Overburden Drilled	56.5 Feet	Hammer Drop	30"
Elevation Top of Rock	— M.S.L.	Casing Left	0'
Total Rock Drilled	0 Feet	Subsurface Water Data	Page 8
Elevation Bottom of Boring	-51.1 M.S.L.	Obs. Well	no
Total Depth of Boring	56.5 Feet	Drilled By	Cambridge and Burnham
Core Recovered	0 % No. Boxes 0	Mfg. Des. Drill	CME45
Core Recovered	0 Ft : Diam. — In.	Inspected By	Beddoe + Fisher
Soil Samples	1 3/8 In. Diam. 9 No.	Classification By	Beddoe
Soil Samples	2 In. Diam. 1 No.	Classification By	Fisher

Boring Started 2/11/87
Boring Completed 2/12/87

DEPTH 1" = 2'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE / REC	BLOWS PER 6" / CORE RECOVERY	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0.0' – 2.0'	S-1	1 3/8"	20%	2, 8, 11, 9	Sample using 1 3/8" ID by 2' long split spoon sampler. First attempt drove a cobble from the surface in front of spoon. Remove large cobble and boulders from 0.0-1.5 manually. Second attempt yeilded sample. Spin 4" casing to 5'. Clean out using 3 7/8" OD roller bit. Note penetration easy throughout boring.	Med. brown cmf SAND and cf GRAVEL, trace SILT (wet, nonplastic) medium dense SW Note petroleum odor. (offsite contaminant).
5.0' – 7.0'	S-2	1 3/8	65%	3, 1, 2, 2	Sample as above	Med. grey CLAY and SILT, little ORGANICS (grass, wood chips) (saturated, plastic) soft CL Note odors of petroleum (offsite contaminant) and sulphur (natural).
7.0' – 10.0'					Spin casing to 10.0' clean out using roller bit.	

GENERAL REMARKS:
Elevations as surveyed in the field by ATL using benchmark near FD-5

All soil sampling performed in accordance with ASTM D1586 except as noted. (UD-1 and UD-2: ASTM D1587)

,58 (Test) Boring No. FD87-21

Site: Roughans Point	Boring No. FD87-21	Page 3 of 8

DEPTH 10'	DEPTH 20'	CORE/SAMPLE NO	CORE/SAMPLE SIZE	CORE/SAMPLE RECOVERY	BLOWS PER 6" CORE DRIVEN	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
				REC	2	Sample using 1 3/8" ID by 2' long split spoon sampler.	Med. grey-brown SILT, little ORGANICS (grass, wood chips), trace CLAY, trace f. SAND. (wet, very slightly plastic) medium stiff ML Note odors of petroleum (offsite contaminant) and sulphur (natural).
		S-3	1 3/8"	100%	3		
					3		
12.0'					3	Explorations end 2/11/87	
						Explorations begin 2/12/87 Spin 4" casing to 15', noting slower penetration indicating sand/gravel layers. Clean out with 3 7/8" OD roller bit	
15.0'							
					3	Sample as above.	Med. grey SILT, little cmf SAND, trace CLAY (soft, very slightly plastic)
		S-4	1 3/8"	40%	3		
					3		
17.0'					4		
						Spin casing to 20' noting continued slow penetration. Clean out with roller bit.	Medium stiff ML
20.0'							
					2	Sample as above	Med. grey CLAY, some SILT, little SHELL FRAGMENTS, (wet, plastic) soft CL
		S-5A	1 3/8"	100%	1		
					2		
21.9'					2		
22.0'		SSD				Explorations end 2/12/87	
						Explorations begin 2/17/87 Note inspector change to PM Fisher. ROLLER BIT IN OPEN HOLE	Dark brown ORGANICS (wood chips) and SILT, trace CLAY (wet, very slightly plastic) soft OL
25.0							
					9		GREY, CLAY, SOME SILT, LITTLE SHELL FRAGMENTS (WET, PLASTIC) STIFF, CL
		S-6	1 3/8"	90%	7		
					8		
27.0'					7		

Site: Roughan's Point | Boring No. FD-87-21 | Page 4 of 8

DEPTH		CORE/SAMPLE				6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
27.0	1'-2'	NO.	SIZE	SAMPLE RECOVERY	BLOWS PER 6" CORE RECOVERY		
				Rec		2" x 2' Driven Split Spoon Followed by Roller Bit	Grey, Clay, Some Silt, Little Shells, Fragments (Wet, Plastic) Stiff, CL
28.0							
30.0							
		S-7	1 3/8	55%	11 11 13 13	Sample using Split Spoon. Undisturbed sample not taken as drilling consistency and blow counts indicated attempt would be unsuccessful. END 2/17/87, START 2/18/87	Gray, Silt, Little f. Sand, Trace Clay (Wet, Slightly Plastic) Medium Dense, ML
32.0							
35.3							
		UD-1	3"	100%	—	3" x 2.9' Pushed Tube Sampler Note: drilling consistency indicated an undisturbed sample would be effective here; therefore SPT was not taken.	
36.9							
40.0							
		S-8	1 3/8	100%	8 7 7 7		Grey Silty Clay (Wet, Plastic) Stiff CL-ML
42.0							

Site: ROUGHANS POINT | Boring No. FD-87-21 | Page 5 of 8

DEPTH	CORE/SAMPLE NO.	SIZE	REC. / CORE RECVY	BLOWS PER FT	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
45.0			REC			
	UD-2	3"	100%	—	3" OD PUSHED TUBE SAMPLER	GREY SILTY CLAY (WET, PLASTIC) STIFF CL-ML
47.0						
48.0						
	S-9	1 3/8"	100%	5 7 7 6	2" OD DRIVEN SPLIT SPOON	As ABOVE
50.0					END 2/18/87, START 2/19/87	
					2" ID core barrel. Note: Drill rig had only 50 ft of steel available. Core barrel was used in an attempt to advance the boring without losing significant amounts of time.	STIFFER MATERIAL @ 52' (noted change in drilling consistency - no sample retained.)
54.3						
	S-10	2"	100%	—	2" ID core barrel Note: Material felt to be DENSE based on consistency while advancing the core barrel.	BROWN-GREY f. SANDY SILT, TRACE CLAY (DRY-MOIST, NON PLASTIC) ML-SM
56.5					BORING TERMINATED @ 56.5	

FIELD LOG OF UNDISTURBED SAMPLING IN DRILL HOLES

SITE ROUGHANS POINT HOLE NO. FO-87-21 DATE 2-18-87

SAMPLE NO. UD-1 (35.3) INSPECTOR FISHER DRILLER CAMBRIDGE T. BURNHAM

A	Total Length of Casing	20.4'	
B	Casing Length above Ground	0.4'	
C	Depth of Bottom of Casing (Below Ground) (A-B)	20.0'	
D	Length of Sampler and Drill Rods	38.0'	
E	Drill Rods Length above Ground	2.7'	
F	Depth of Bottom of Clean-Out Auger (below ground)(D-F)	35.3'	
G	Distance of Bottom of Auger above or below Casing(F-C)	15.3'	
		Drill Rods, (1)	Piston Rods, (2)
H	Total Length, Sampler and Rods	38.0'	N/A
I	Length of Rods above Ground	2.7'	N/A
J	Depth of Bottom of Sampler (below ground) (H-I) (1) & (2), (Depth of Top of Sample)	35.3'	N/A
K	Penetration of Sampler, (K-F) (1)	1.6'	N/A
L	Penetration or Swell of Piston (K-F)(2)	N/A	N/A
	Data after Jacking		
M	Length of Sampler and Piston Rods above Ground	1.1'	N/A
N	Length of Drive (I-M)(1)	1.6'	
O	Piston Displacement (I-M) (2)	N/A	
P	Length of Sample Recovered	2.1'	
Q	Length of Sample Lost	GAIN 0.5' (CAVE IN)	
R	Amount of Sample Recovered, %, $\frac{P}{N} \times 100$	100%	
S	Type and Size of Sampler 3"OD X 2.9' SOLID TUBE SAMPLER		
T	Method and Time of Penetration HYD. DOWN PRESSURE (SEE NOTE*)		
U	Type of Materials Sampled ML		

Other Notes and Remarks: *450 PSI @ 22:43 HRS PUSH,
NOTED HARD PUSH THE FIRST 1.0' (500 PSI)
WAITED 10 MIN, TURNED ROD & PULLED

FIELD LOG OF UNDISTURBED SAMPLING IN DRILL HOLES

SITE Roughan's Point HOLE NO. FD-87-21 DATE 2-18-87

SAMPLE NO. UD-2 (45.0') INSPECTOR Fisher DRILLER Cambridge + Burnham

A	Total Length of Casing	20.4'	
B	Casing Length above Ground	0.4'	
C	Depth of Bottom of Casing (Below Ground) (A-B)	20.0'	
D	Length of Sampler and Drill Rods	48.0'	
E	Drill Rods Length above Ground	3.0'	
F	Depth of Bottom of Clean-Out Auger (below ground)(D-F)	45.0	
G	Distance of Bottom of Auger above or below Casing(F-C)	25.0	
		Drill Rods, (1)	Piston Rods, (2)
H	Total Length, Sampler and Rods	48.0'	N/A
I	Length of Rods above Ground	3.0'	N/A
J	Depth of Bottom of Sampler (below ground) (H-I) (1) & (2), (Depth of Top of Sample)	45.0'	N/A
K	Penetration of Sampler, (K-F) (1)	2.0'	N/A
L	Penetration or Swell of Piston (K-F)(2)	N/A	N/A
	Data after Jacking		
M	Length of Sampler and Piston Rods above Ground	1.0'	N/A
N	Length of Drive (I-M)(1)	2.0'	
O	Piston Displacement (I-M) (2)		N/A
P	Length of Sample Recovered	2.7	
Q	Length of Sample Lost	GAIN 0.7 (CAVE IN)	
R	Amount of Sample Recovered, %, $\frac{P}{N} \times 100$	100%	
S	Type and Size of Sampler 3"OD x 2.9' Solid Tube Sampler		
T	Method and Time of Penetration Hyd Down Pressure (See Note *)		
U	Type of Materials Sampled Grey Silty Clay CL-ML		

Other Notes and Remarks:

* Push Pressure 450 psi @ 2110 hrs, Waited 10 min, Turned Rod + Pulled

NED FORM DEC 63 74 REPLACES EDITION OF MAR 53 WHICH MAY BE USED UNTIL EXHAUSTED

Site: Roughan's Point
Boring No: FD87-21

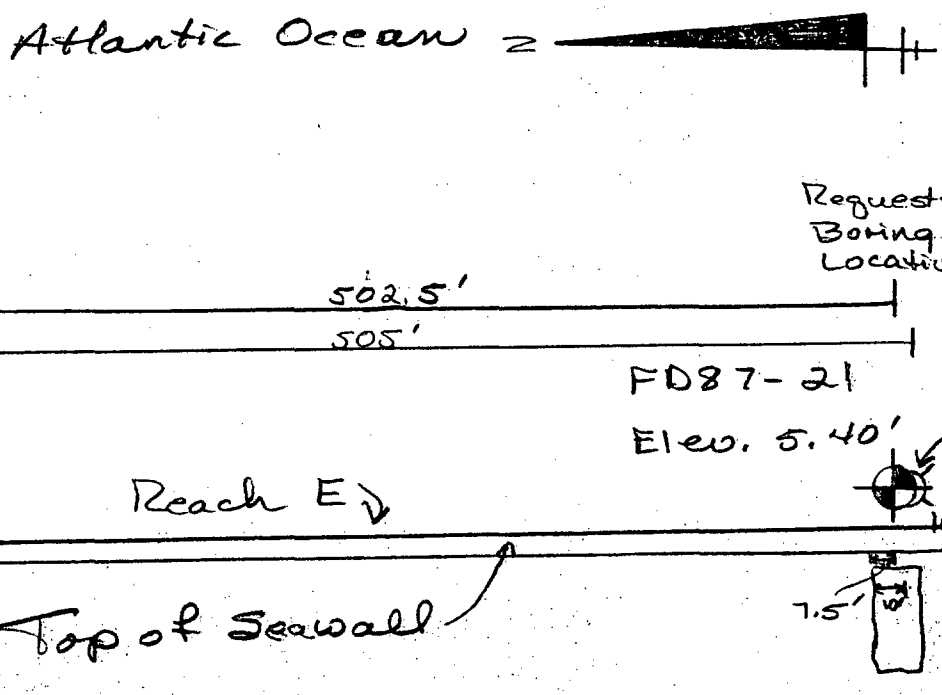
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
2/12/87	3:10P	10.0'	12.0'	0.0'	5.4'	At start of drilling operations.
2/17/87	0730	20.0'	22.0'	3.0'	2.4'	
2/18/87	0750	20.0'	32.0'	2.5'	2.9'	
2/19/87	0820	20.0'	50.0'	2.7'	2.7'	

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. D.O.#0018

Site Roughan's Point, Revere MA — Page 1 of 4 Pages

Hole No. FD87-22 Diam. (Casing) 3¼" ID Hollow Stem Auger — Boring Started 2/6/87

Co-ordinates: * see * sketch — Boring Completed 2/16/87

Drilled by Cambridge & Burnham — Report Submitted

Purpose of Exploration determine foundation conditions for proposed revetments, sluice gate and earth berms.

Elevation Top of Hole 5.80 M.S.L.
Total Overburden Drilled 22.5 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole −16.7 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 22.5 Feet
Core Recovered — %
Core Recovered — Ft.; — Diam. — In.
Soil Samples 1 3/8 In. Diam. 4 No.
Soil Samples — In. Diam. — No.

Casing Left in Place 0 Feet
Water Table Depth —

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	6	Rip Rap Removed By Backhoe
6	11	3¼" ID Auger + Roller Bit*
11	22.5	Open Hole, Roller Bit*
		*includes 1 3/8" split spoon sampling
		every 5'

INDEX

Prepared by P.M. Fisher (Field Data) — (Lab. Data)

Submitted by Atlantic Testing Labs, Ltd.

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Roughan's Point, Revere MA Page 3 of 4 Pages

Boring No. ~~FD87-22~~ Desig. 4 Diam. (Casing) 3 1/4" Hollow Stem Auger

Co-ordinates: N see sketch E

Elevation Top of Boring 5.80 M.S.L. | Hammer Wt. 140# | Boring Started 2/6/87
Total Overburden Drilled 22.5 Feet | Hammer Drop 30" | Boring Completed 2/16/87
Elevation Top of Rock — M.S.L. | Casing Left 0' |
Total Rock Drilled 0 Feet | Subsurface Water Data — Page —
Elevation Bottom of Boring -16.7 M.S.L. | Obs. Well NO
Total Depth of Boring 22.5 Feet | Drilled By Cambridge + Burnham
Core Recovered — % No. Boxes — | Mfg. Des. Drill CME 45
Core Recovered — Ft : — Diam. — In. | Inspected By: P.H. Fisher
Soil Samples 1 3/8 In. Diam. 4 No. | Classification By: Fisher
Soil Samples — In. Diam. — No. | Classification By: —

DEPTH 0.0'	1"=2'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	% CORE RECVY	BLOWS PER FT.	6" SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
				DEC			Six feet of boulders removed by subcontracted track backhoe	Boulders (riprap) 1-10 ft³ in size; interstial material air.
6.0'							Explorations end 2/6/87	
		S-1	1 3/8	15%		11 13 9 11	START 2/16/87 1 3/8 x 2' SPLIT SPOON 3 1/4" ID HOLLOW STEM AUGER Augering difficult throughout boring.	GREY GRAVELLY cmf SAND, TRACE SILT (MOIST, NON-PLASTIC) MEDIUM DENSE, SW
8.0								
9.0								
	10							

GENERAL REMARKS:
Elevations as determined in the field by ATC using benchmark near FD-5 (FD87-20)
All soil sampling performed in accordance with ASTM D1586 except as noted.

Site: Roughans Pt.

Boring No. FD-87-22

Page 3 of 4

DEPTH		CORE/SAMPLE			BLOWS PER FT	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	1 - 2	NO	SIZE	DEPTH RANGE	CORE RECOVERY		
				REC			
11.0							
					26	1 3/8" X 2' SPLIT SPOON,	BROWN & GREY SILTY
					42	OPEN HOLE USING 3"	f. SAND, SOME GRAVEL
		S-2	1 3/8	90%	80	ROLLER BIT	(MOIST, SLIGHTLY PLASTIC)
13.0					74		DENSE, SP-SM
14.5							
							6" COBBLE @ 15.3'
16							
					27	AS ABOVE	GREY, CLAYEY SAND,
		S-3	1 3/8	45%	35		LITTLE GRAVEL, LITTLE
					38		SILT (MOIST, PLASTIC)
18					80		DENSE, SC
21							
					45	AS ABOVE	AS ABOVE
		S-4	1 3/8	15%	60		
22.5					57		
						BORING TERMINATE @ 22.5	

Site: Vaughan's Point
Boring No: FD87-22

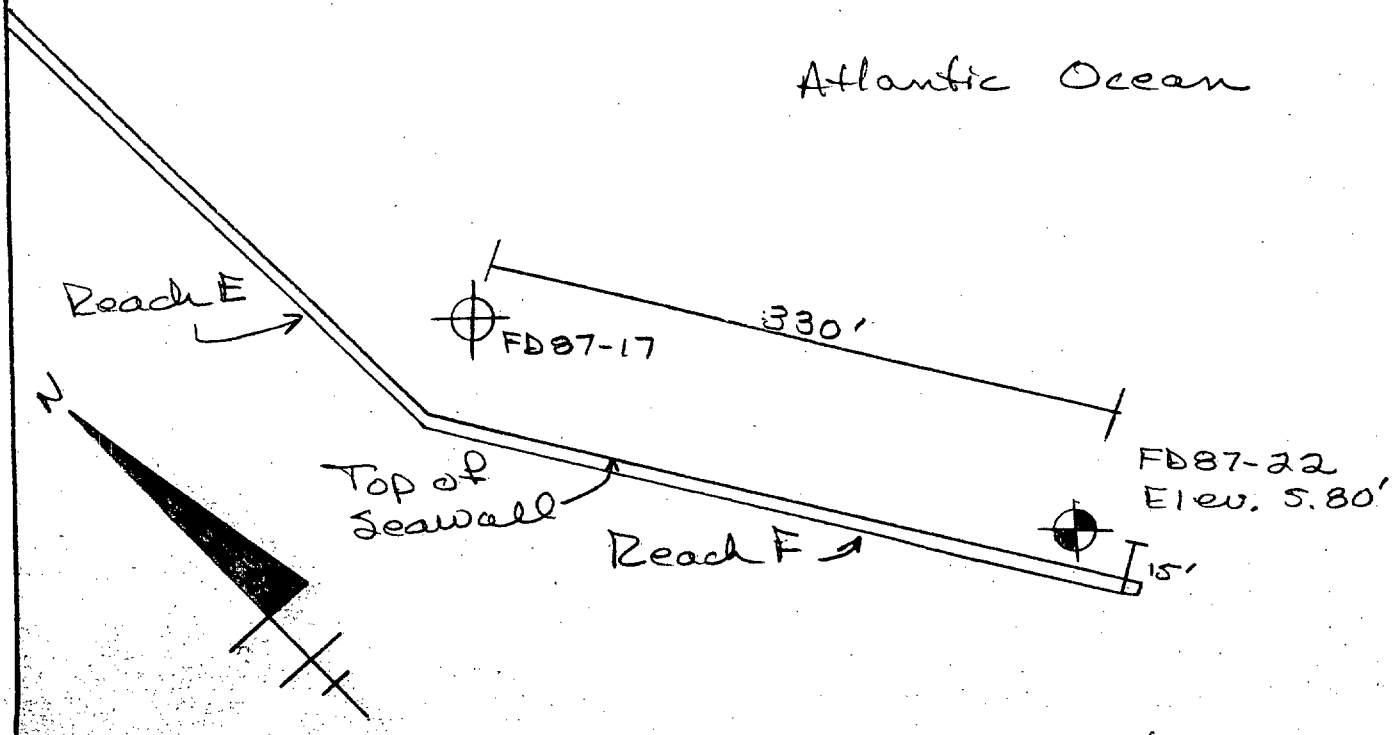
SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
2/16/87	8:40P	—	22.5'	0.0'	5.80'	Note: Drilling method used water to advance the 3 7/8" OD roller bit. Water was consistently at the surface during drilling. Boring was advanced through dense, relatively impermeable material. Returning tide forced us offsite before we could measure any appreciable drop of the head in the boring.

Note: Depths are in feet below original ground

Not to Scale

BORING LOCATION SKETCH



Note: As-built boring location is the requested location.

SECTION 9

OTHER RECORDS TAKEN

a. Survey Notes

ROUGHAN'S POINT

CRAIG 46

JAN 6, 1987 ~~1986~~

M. Montgomery
T. BEDDOE

①

	BS		FS	Elev
BM @ HSU-R Sq Top Wall	1.56	18.87		17.31
TIPT #1			11.34	7.53
BS TIPT-1	1.11	8.64		7.53
FD-R			6.62	2.02
FD-~~R~~ T			12.40	-3.76
FD-~~R~~ U			2.83	5.81
TIPT-2			5.96	2.68
TIPT-2	9.805	12.49		2.68
FD-~~R~~ S			2.37	10.12
TIPT-3			8.52	3.97
TIPT-3	6.61	10.58		3.97
FD-P			12.74	-2.16
FD-Q			5.18	5.40
FD-O TIPT 4			2.85	7.73
TIPT-4	1.93	9.66		7.73
FD N			12.97	-3.31
FD M			8.68	0.98
TIPT-5			0.80	8.86
	21.015			

②

	BS		FS	Elev
TIPT-5	7.04	15.90		8.86
TIPT-6			9.96	5.94
TIPT-6	0.695	6.64		5.94
FD-K			5.78	0.86
FD-L			2.69	3.95
FD-I			8.16	-1.52
FD-J			5.10	1.54
TIPT-7			4.32	2.32
TIPT-7	3.56	5.88	~~X~~	2.32
FD-G			7.47	-1.59
FD-H			5.07	0.81
FD-F			4.57	1.31
FD E			5.90	-0.02
TIPT-8			0.90	4.98
TIPT 8	10.925	15.91		4.98
FD-C			8.18	7.73
FD-D			4.22	11.69
Temp Bm Top Wall			0.76	15.15
T.BM	3.30	18.45		15.15
FD-B			6.50	11.95
FD-A			8.57	9.88

③	T. B. M. BS	TO	BEG. BM FS	EIEV	
T. B. M.	0.26	15.41		15.15	
TTPT 9			6.635	8.78	
TTPT-9	6.53	15.31		8.78	
TTPT-10			5.20	10.11	
TTPT-10	4.385	14.50		10.11	
TTPT-11			5.02	9.48	
TTPT-11	8.34	17.82		9.48	
BM on wall chiseled sq.			0.55	17.27	17.81 / 17.27 / .104'
	66.050		62.815		
	-3.300		62.200		
	62.750		.015		

	BS	T	FS	ELEV
TEMP B. MONWALL	3.30	18.45		15.15
TTPT-1			7.555	10.90
TTPT-1	7.235	18.13		10.90
FD-V			8.36	9.77
TTPT-1	8.12	~~17.87~~ 19.02		10.90
TTPT-2			0.940	~~16.94~~ 18.07
TTPT-2	9.68	~~26.62~~ 27.75		~~16.94~~ 18.07
TTPT-3			0.36	~~21.26~~ 27.39
TTPT-3	3.325	~~29.57~~ 30.72		~~21.26~~ 27.39
TTPT-4			10.53	~~19.04~~ 20.19
TTPT-4	2.60	~~24.66~~ 22.79		~~19.04~~ 20.19
TTPT-5 END CHANNEL TAIL			9.82	~~11.84~~ 12.97
TTPT-5	0.53	~~12.32~~ 13.50		~~11.84~~ 12.97
FD-W			8.12	~~4.25~~ 5.38

BOLING ELEVATIONS ROUGHAN'S POINT

CK CD 020

ELEV. by M. MONTGOMERY + T. BEDDOE JAN 6, 1987

FD – A = 9.90

B = 12.00

C = 7.70

D = 11.70

E = 0.00

F = 1.30

★ G = – 1.60

H = 01.80

★ I = – 1.50

J = 1.50

K = 0.90

L = 4.00

M = 1.00

★ N = – 3.30

O = 7.70

★ P = – 2.20

Q = 5.40

R = 2.00

S = 10.10

★ T = – 3.80

U = 5.80

V = 9.80

W = 5.40

CC, TADENSK B.
PAT. S.

★ – THESE ELEVATIONS ARE MINUS ELEVATIONS

MDM 1/8/87

b. Letter to Ms. Dorothy Scholwin

ATLANTIC TESTING LABORATORIES, LIMITED

Sustaining Member—N.Y.S. Society of Professional Engineers

Box 29
Canton, N.Y. 13617
(315) 386-4578

Box 356
Cicero, N.Y. 13039
(315) 699-5281

January 9, 1987

Mrs. Dorothy Scholwin
156 Broad Sound
Revere, MA 02151

Re: Roughans Point Coastal Flood Protection Study

Dear Mrs. Scholwin:

Atlantic Testing Laboratories is under contract with the New England Division of the Army Corps of Engineers, Waltham, MA, to provide geotechnical exploratory work and related services for various projects in the New England and New York areas.

We are currently involved with a project in your area to determine foundation conditions for proposed revetments, sluice gates and earth berm for the Roughans Point Coastal Flood Protection Study.

Our firm's task regarding this project involves retrieving soil samples and evaluating bearing capacity of the underlying soils to insure the structural integrity of the proposed revetments.

Soil samples are taken at predetermined locations (see attached location drawing) to give an overall view of the subsurface conditions along the revetments.

Six of these sampling points require that we cross your beach property to reach these sampling points. None of the sampling points are on your property.

We respectfully request that you allow our sampling crews to cross your beach property. We will notify you each time we cross your property. Our crews would cross at low tide and stay well out on the beach area. Please be assured we will not cause any damage to your property.

Thank you for your consideration in this matter.

Respectfully submitted,

Spencer F. Thew, P.E./L.S.
President